AD743964

Report No. 120-1

February 26, 1971

BIBLIOGRAPHY ON POWER BOAT DESIGN

by Joseph G. Koelbel, Jr.

1972

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

Prepared for:

Naval Ship Systems Command

Under Administration by:

Office of Naval Research

Contract Number:

N00014-69-C-0257

Joseph G. Koelbel, Jr.
Naval Architect
51 Biltmore Blvd.
Massapequa, New York 11758

Unclassified
Security Classification

DOCUMENT CONTROL DATA - R&D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

AD 743 964

1. ORIGINATING ACTIVITY (Corporate author) JOSEPH G. KOELBEL, JR. 51 Biltmore Blvd. Massapequa, N.Y. 11758	2a. REPORT SECURITY CLASSIFICATION Unclassified
	2b. GROUP

3. REPORT TITLE

BIBLIOGRAPHY ON POWER BOAT DESIGN

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

FINAL REPORT

5. AUTHOR(S) (Last name, first name, initial)

KOELBEL, JOSEPH G. JR.

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
FEBRUARY 1971	241	1000

8a. CONTRACT OR GRANT NO. N00014-69-C-0257	9a. ORIGINATOR'S REPORT NUMBER(S) 120-1
b. PROJECT NO.	
c.	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)
d	

10. AVAILABILITY/LIMITATION NOTICES

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
	NAVAL SHIP SYSTEMS COMMAND OFFICE OF NAVAL RESEARCH

13. ABSTRACT

A partially annotated bibliography on the design and construction of commercial and military power boats. The prediction of performance and the structural design of planing hulls are emphasized, with some material on small displacement craft such as fishing vessels and coasters. References are arranged in subject categories useful to the design naval architect. Over 1000 references are listed.

Reproduced by
NATIONAL TECHNICAL
INFORMATION SERVICE
U S Department of Commerce
Springfield VA 22151

I

DD FORM 1 JAN 64 1473

Unclassified
Security Classification

Unclassified
Security Classification

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
SMALL CRAFT						
BIBLIOGRAPHY						
RESISTANCE						
PROPULSION						
SEAKEEPING						
APPLIED LOADS						
SUBSYSTEMS						

INSTRUCTIONS

1. ORIGINATING ACTIVITY: Enter the name and address of the contractor, subcontractor, grantee, Department of Defense activity or other organization *(corporate author)* issuing the report.

2a. REPORT SECURITY CLASSIFICATION: Enter the overall security classification of the report. Indicate whether "Restricted Data" is included. Marking is to be in accordance with appropriate security regulations.

2b. GROUP: Automatic downgrading is specified in DoD Directive 5200.10 and Armed Forces Industrial Manual. Enter the group number. Also, when applicable, show that optional markings have been used for Group 3 and Group 4 as authorized.

3. REPORT TITLE: Enter the complete report title in all capital letters. Titles in all cases should be unclassified. If a meaningful title cannot be selected without classification, show title classification in all capitals in parenthesis immediately following the title.

4. DESCRIPTIVE NOTES: If appropriate, enter the type of report, e.g., interim, progress, summary, annual, or final. Give the inclusive dates when a specific reporting period is covered.

5. AUTHOR(S): Enter the name(s) of author(s) as shown on or in the report. Enter last name, first name, middle initial. If military, show rank and branch of service. The name of the principal author is an absolute minimum requirement.

6. REPORT DATE: Enter the date of the report as day, month, year, or month, year. If more than one date appears on the report, use date of publication.

7a. TOTAL NUMBER OF PAGES: The total page count should follow normal pagination procedures, i.e., enter the number of pages containing information.

7b. NUMBER OF REFERENCES: Enter the total number of references cited in the report.

8a. CONTRACT OR GRANT NUMBER: If appropriate, enter the applicable number of the contract or grant under which the report was written.

8b, 8c, & 8d. PROJECT NUMBER: Enter the appropriate military department identification, such as project number, subproject number, system numbers, task number, etc.

9a. ORIGINATOR'S REPORT NUMBER(S): Enter the official report number by which the document will be identified and controlled by the originating activity. This number must be unique to this report.

9b. OTHER REPORT NUMBER(S): If the report has been assigned any other report numbers *(either by the originator or by the sponsor)*, also enter this number(s).

10. AVAILABILITY/LIMITATION NOTICES: Enter any limitations on further dissemination of the report, other than those imposed by security classification, using standard statements such as:

(1) "Qualified requesters may obtain copies of this report from DDC."

(2) "Foreign announcement and dissemination of this report by DDC is not authorized."

(3) "U. S. Government agencies may obtain copies of this report directly from DDC. Other qualified DDC users shall request through
____________________________."

(4) "U. S. military agencies may obtain copies of this report directly from DDC. Other qualified users shall request through
____________________________."

(5) "All distribution of this report is controlled. Qualified DDC users shall request through
____________________________."

If the report has been furnished to the Office of Technical Services, Department of Commerce, for sale to the public, indicate this fact and enter the price, if known.

11. SUPPLEMENTARY NOTES: Use for additional explanatory notes.

12. SPONSORING MILITARY ACTIVITY: Enter the name of the departmental project office or laboratory sponsoring *(paying for)* the research and development. Include address.

13. ABSTRACT: Enter an abstract giving a brief and factual summary of the document indicative of the report, even though it may also appear elsewhere in the body of the technical report. If additional space is required, a continuation sheet shall be attached.

It is highly desirable that the abstract of classified reports be unclassified. Each paragraph of the abstract shall end with an indication of the military security classification of the information in the paragraph, represented as *(TS)*, *(S)*, *(C)*, or *(U)*.

There is no limitation on the length of the abstract. However, the suggested length is from 150 to 225 words.

14. KEY WORDS: Key words are technically meaningful terms or short phrases that characterize a report and may be used as index entries for cataloging the report. Key words must be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location, may be used as key words but will be followed by an indication of technical context. The assignment of links, rules, and weights is optional.

Unclassified
Security Classification

ACKNOWLEDGEMENT

The author wishes to acknowledge the assistance of Mr. G. Gordon Sammis, Naval Architect, in the compilation of the bibliography and in the preparation of the report.

CONTENTS

ABSTRACT

A partially annotated bibliography on the design and construction of commercial and military power boats. The prediction of performance and the structural design of planing hulls are emphasized, with some material on small displacement craft such as fishing vessels and coasters. References are arranged in subject categories useful to the design naval architect. Over 1000 references are listed.

I. PROJECT HISTORY

The concept of a small craft bibliography originated in the early 1960's with Panel H-12 (Planing Boats) of the Society of Naval Architects and Marine Engineers. Each of the Panel members submitted a list of references which had been found useful. The work of compiling these, eliminating duplication, adding new references, etc., was carried out on a voluntary, part-time basis over a period of years. It became apparent that completion of the bibliography would require a greater expenditure of man-hours than was possible on a voluntary basis. Because the bibliography and a companion document summarizing the present state-of-the-art would be of benefit to the Naval Ship Systems Command and to the Naval Ship Engineering Center in dealing with civilian designers, funds for this work were made available through the Office of Naval Research. The original project was intended to cover only the hydrodynamics of planing hulls. The present contract allowed for a broader coverage of material related to power boat design.

II. SUBJECT MATERIAL

A. Intent

The purpose of this bibliography is to provide the small craft naval architect with a current listing of reference material related to the design and prediction of performance of power boats. In accomplishing this objective within the limited resources allotted, certain overall guidelines have been followed.

1. Project funds have been directed primarily towards the collection and listing of references, with secondary consideration given to data retrieval techniques and editorial presentation.
2. In cases where objective decisions were borderline, a subjective decision has been made quickly to expedite completion of the work. This applies to assignment of subject categories and to groupings of material into Essential, Useful, and Background categories.
3. In anticipation that the above restrictions on project effort would eventually require revising the bibliography layout, the original material has been mechanically assembled in a way that allows easy revision.

B. Emphasis

The bibliography emphasizes the design and construction of planing and semi-planing craft, with special attention being given to the prediction of performance. At the suggestion of a number of contributors, a significant body of historical works on planing phenomena has been included. Some of this material is still applicable to the design of fast hulls. Most of the early work on impact loadings was accomplished by the seaplane designers and this contribution is adequately represented. The remaining material is of interest in tracing the development of the art. While emphasis is on planing craft, there is an ample listing of recent valuable work on the design of displacement craft such as trawlers and other small coastal vessels.

C. Limitations

The collection does not cover the entire field of small craft design as practiced today. Certain areas which were specifically excluded are:

1. Classified references
2. Sailboats
3. Hydrofoil craft, except for hull design
4. Air cushion or surface effect craft
5. Foreign sources, with some exceptions

The most difficult limitation to accept is that volume of material which was located and is not included for various reasons of the originators or repository agencies. Three reasons were given, the first and most frustrating being the lack of both secretarial and reproduction facilities to handle requests for data. The second concerns data which had not been reviewed satisfactorily for technical quality or which was not in a form for outside use. The third category is information which was propietary or had restricted distribution limitations. Some of the latter material has been included

anyhow for those users who are able to justify access. Most documents in these three categories have very limited use to the designer, but a few were of such value that they should be made available to the design community. Perhaps a worthwhile future effort would be to liberate them for general use.

D. Abstracts and Comments

The bibliography is partially annotated. Where abstracts of articles were given in the source documents or in reviews, they have been included verbatim. If the document's contents were known and no abstract given, apprcpiate comments have been added where they would augment the understanding provided by the title alone. Not all of the entries have been reviewed and therefore the user must use his own judgement and the Value Index as a guide for selecting documents for acquisition.

E. Revisions

Mechanically, the original copy is prepared in strips the same height as a 35mm film negative. These strips are inserted in pages of plastic sleeves used for storage of photographic negatives. This system allows for easy revision of the original and for rearrangement of material without massive retyping. Retyping of this kind of material leads to an accumulation of errors and eventual loss of utility. The number of entries does not at present justify a computerized method of retrieval but as the document is revised the point may be reached where this method becomes economically justifiable.

III DOCUMENT SOURCES

A. Abbreviations and Source Addresses

Many of the sources are self explanatory, but there are a number of sources which are indicated by abbreviations or acronyms. These are identified below, as are the addresses of sources appearing frequently enough to merit their listing. The user will find some of the documents difficult to obtain. It is the purpose of the bibliography to make their existence known. The tracing of their various supply histories is beyond the scope of the project. In particular there is the problem of the constant change in government organization, and specifically in the Department of Defense, which may make the securing of a limited distribution document of older vintage a difficult chore. While agencies change names, fortunately key people do not, and the best route to securing a document is to contact someone who is involved in the original work. It is hoped that users of this bibliography will exercise discretion in requesting the documents listed herein and that by so doing, the continued cooperation of key contributors will be maintained.

AEW	Admiralty Experiment Works Haslar, Gosport, Hampshire England
AIAA	American Institute of Aeronautics and Astronautics 1290 Avenue of the Americas New York, N.Y. 10019
ARC	Aeronautical Research Commitee Advisory Committee for Aeronautics England
ASME	American Society of Mechanical Engineers 345 East 47 Street New York, N.Y. 10017
ASNE	American Society of Naval Engineers Suite 507, Continental Building 1012 14 Street N.W. Washington, D.C. 20005

BuAer NavAir	Naval Air Systems Command Washington, D.C. 20360
BuShips NavShips	Naval Ship Systems Command Washington, D.C. 20360
EMB, TMB DTMB NSRDC	Naval Ship Research and Development Center Washington, D.C. 20034
IAS	Institute of the Aeronautical Sciences (now AIAA)
ISP	International Shipbuilding Progress International Periodical Press 194 Heenraadssingle Rotterdam, The Netherlands
IME	Institute of Marine Engineers 85, Minories London, E.C. 3, England
JAS	Journal of the Aeronautical Sciences (Formerly a publication of IAS, now the AIAA Journal)
NACA NASA	National Aeronautics and Space Administration 400 Maryland Avenue S.W. Washington, D.C. 20360
NECI	North-East Coast Institution of Engineers and Shipbuilders Bolbec Hall Newcastle-upon-Tyne, England
NSMB	Netherlands Ship Model Basin Haagsteeg 2 Wageningen, The Netherlands
SAE	Society of Automotive Engineers 2 Pennsylvania Plaza New York, N.Y. 10001
SBSR	Shipbuilding and Shipping Record 33, Tothill Street Westminster, London S.W. 1, England
SIT ETT DL	Davidson Laboratory Stevens Institute of Technology 711 Hudson Avenue Hoboken, New Jersey 07030
SNAME	The Society of Naval Architects and Marine Engineers 74 Trinity Place New York, N.Y. 10006

B. DDC and Clearinghouse Documents

Many publications of the government agencies are distributed through the Defense Documentation Center and The Clearinghouse for Federal Scientific and Technical Information. Documents handled by these agencies are identified by code numbers, of the form "AD-000 000". Wherever such a number is shown after an entry, the document may be obtained from one of these agencies. Normally, unclassified documents are supplied from the Clearinghouse by direct sale to the public. Defense Contractors or others eligible to receive AD documents at no charge order their documents through the DDC system. Requests for unclassified material received from these users are then passed on to the Clearinghouse. Classified material is supplied directly from DDC. An AD number suffixed with the letter "L" indicates a document having a limited distribution and will require the permission of the cognizant agency before it can be obtained from DDC or the Clearinghouse. Requests for AD documents should be forwarded to:

Clearinghouse for Federal Scientific and Technical Information
Sills Building
5285 Port Royal Road
Springfield, Virginia 22171

or, if applicable,

Defense Documentation Center
Cameron Station
Arlington, Virginia 22314

These agencies have special procedures and request forms which greatly expedite delivery of documents to users making regular requests.

IV USER'S GUIDE

A. Arrangement

The bibliography is separated into 28 subject categories. Within each subject, documents are arranged in four groups according to their judged value to the working designer, with the most essential material in the first group. The groups are identified by a Value Index. The Value Indices are defined as follows:

Essential - Document contains information essential to the understanding of the subject. It is considered that the user must be familiar with the material in order to remain abreast of the state of art. In some cases the document may not be the sole authority, but is considered one of the best.

Useful - Contains information of frequent value in design.

Background - Information which may be of occasional use to the designer or researcher, or may have historic value.

An entry which carries no Value Index is in a fourth category, which is one of indecision. It is important to note that articles in this category might be considered in any of the three above if its contents were known to the reviewer.

The assignment of a Value Index is not a measure of the technical quality of the document. It is simply an opinionated judgement of its "frequency of usefulness" to the naval architect engaged in the design of small craft and is given as an aid to the acqusition of library material. Therefore some of the basic works which established planing theory may appear as background papers simply because more recent investigators have expanded the concepts in later work.

Within each Value Index Group, the articles are arranged by alphabetical order according to the first listed author.

The procedure in locating material is then first to locate the applicable subject category. The first group of articles will be the Essential material; the second, Useful; and the third, Background. The undesignated articles will appear in the fourth group. Within each group the user can quickly scan the page if he is doing a general search, or may go immediately to the articles written by a specific author. If there is some doubt as to the subject category, the user will find that it is seldom possible for material to be located under more than two categories with the subject headings that have been selected. A listing is made only once in this bibliography. There is no multiple listing of articles. If there was doubt as to the original subject category which should be assigned, the most likely one was selected and the entry appears nowhere else.

B. Entry Format

Listings follow the following format:

Author's Last Name, First Initial,--"TITLE OF ARTICLE IN CAPS" -- Date of Publication and Source. AD Number if Applicable.

SUBJECT CATEGORY,Value Index

C. Subject Categories

Subject categories were selected to minimize redundancy in assigning articles to a particular group. Categories are to be interpreted literally as defined in the listing which follows. The full name of the category is followed by the short form identifier which accompanies each entry.

SUBJECT CATEGORIES

Codes, Standards, and Regulations	REGS
General References and Basic Texts	GENERAL
Vessel Descriptions and Full Scale Performance Data	VESSELS
Hydrostatics and Weights	STATICS
Resistance (Includes all multi-purpose model test data)	RES
Propulsion	PROP
Steering (Including directional stability and maneuvering)	STEER
Seakeeping and Motions	MOTIONS
Applied Loads (Including impact and hull vibration)	LOADS
Strength Calculations (Stress, strain, deflection, buckling)	STRESS
General Construction Methods (Includes drafting and lofting)	CONST
Aluminum	ALUM
Ferro-Cement	CEMENT
Fiberglass	GLASS
Steel	STEEL
Wood	WOOD
Composite and Miscellaneous	COMP
Engine Selection and Rating	ENGINE
Engine Installation and Control (Including engine vibration)	ENG INST
Shafting, Gears, and Propellers (Mechanical considerations)	DRIVES
Diesel Engines	DIESEL
Gasoline Engines	GAS ENG
Gas Turbines	GAS TURB
Steam Propulsion	STEAM
Firefighting and Lifesaving	SAFETY
Electrical and Electronics	ELECT
Piping and Hydraulics	PIPING
Outfit and Rigging	OUTFIT

Anonymous,"SAFETY STANDARDS FOR SMALL CRAFT," American Boat and Yacht Council, 420 Lexington Ave., New York, N.Y. 10017. 1968.

REGS, Useful

Anonymous, "FIRE PROTECTION STANDARD FOR MOTOR CRAFT (Pleasure and Commercial)" NFPA 302, National Fire Protection Association, 60 Batterymarch Street, Boston, Mass. o2110 (Issued periodically)

REGS, Useful

Anonymous, "RULES FOR BUILDING AND CLASSING STEEL VESSELS," American Bureau of Shipping, Issued periodically.

REGS, Useful

Anonymous, "RULES FOR BUILDING AND CLASSING STEEL VESSELS FOR SERVICE ON RIVERS AND INTERCOASTAL WATERWAYS," American Bureau of Shipping, 45 Broad St., New York.

REGS, Useful

Anonymous, "RULES FOR BUILDING AND CLASSIFICATION OF WOODEN VESSELS," Det Norske Veritas, Norway.

REGS, Useful

Anonymous, "RULES AND REGULATIONS FOR THE CONSTRUCTION AND CLASSIFICATION OF WOODEN FISHING VESSELS," Bureau Veritas.

REGS, Useful

Anonymous, "RULES FOR THE CONSTRUCTION AND CLASSIFICATION OF WOOD AND COMPOSITE YACHTS," Lloyds Register of Shipping, 17 Battery Place, New York, $10.00.

REGS, Useful

Anonymous, "RULES FOR THE CONSTRUCTION OF REINFORCED PLASTIC YACHTS," Lloyds Register of Shipping, 17 Battery Place, New York, $10.00.

REGS, Useful

Anonymous, "RULES FOR THE CONSTRUCTION AND CLASSIFICATION OF STEEL YACHTS," Lloyds Register of Shipping, 17 Battery Place, New York. $10.00.

REGS, Useful

Anonymous, "STEEL TRAWLERS, RULES AND REGULATIONS," Lloyds Register of Shipping, London.

REGS, Useful

Anonymous, "RULES AND REGULATIONS FOR UNINSPECTED VESSELS," U.S.Coast Guard, CG 258, Issued periodically.

REGS, Useful

Anonymous, "RULES OF THE ROAD INTERNATIONAL-INLAND," U.S. Coast Guard, CG-169, Issued periodically.

REGS.Useful

Anonymous, "RULES AND REGULATIONS FOR SMALL PASSENGER VESSELS (SUBCHAPTER T)," CG-323 U.S. Coast Guard, Issued Periodically.

REGS,Useful

Anonymous, "SIMPLIFIED SUBDIVISION AND STABILITY PROCEDURES" Coast Guard Hq., MMT Letters dated 25 November 1959, Navigation and Vessel Inspection Circular No. 5-59.

REGS, Useful

Anonymous, "VENTILATION SYSTEMS FOR SMALL CRAFT," U.S. Coast Guard Bulletin CG 395.

REGS, Useful

Price, R.I., "STABILITY OF FISHING VESSELS," SNAME, Marine Technology, October 1968.

Reviews latest recommendations of the Intergovernmental Maritime Organization of U.N. Safety Committee regarding intact stability. Will be printed as USCG guide.

REGS, Useful

Anonymous, "PROVISIONAL RULES FOR THE CONSTRUCTION OF REINFORCED PLASTIC YACHTS," LLoyds Register of Shipping, 10 Church St, London, E.C.3.

REGS. Background

Anonymous, "PROVISIONAL RULES FOR THE APPLICATION OF GLASS REINFORCED PLASTICS TO FISHING CRAFT," LLoyds Register of Shipping, Ten Church Street, London, E.C.3.

REGS, Background

Anonymous, "ENGINE TEST CODE FOR NON-TURBOCHARGED SPARK-IGNITION AND DIESEL ENGINES", SAE Standards J816a, SAE Handbook, Society of Automotive Engineers.

REGS, Background

Anonymous, "RULES AND REGULATIONS FOR THE NUMBERING OF UNDOCUMENTED VESSELS AND THE REPORTING OF BOATING ACCIDENTS," U.S.Coast Guard, CG 267, Issued periodically.

REGS, Background

Anonymous, "RULES FOR BUILDING AND CLASSING WOOD VESSELS," American Bureau of Shipping.

Unserviced since 1921, limited applicability to construction today.

REGS, Background

Anonymous, "STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF SCOTTISH FISHING VESSELS," White Fish Authority, (U.K.).

REGS, Background

Anonymous, "TENTATIVE CODE FOR THE SELECTION OF WROUGHT ALUMINUM ALLOYS FOR SHIP STRUCTURES," SNAME T & R Bulletin 2-5.

REGS, Background

Hopkins, G. C., "MODERN TRENDS IN SHIP'S RADIO COMMUNICATIONS," SNAME, Marine Technology, October 1968.

An excellent guide to rules and regulations covering marine communications.

REGS, Background

Robertson, J.B.,Jr., "SOME OBSERVATIONS ON THE SAFETY OF LIFE AT SEA CONVENTION 1960. SNAME Southern California, January 12, 1961.

REGS, Background

Anonymous, "GAS TURBINE POWER PLANTS", Power test Codes, ASME PTC 22-1966.

REGS,

Barnaby, K.C., BASIC NAVAL ARCHITECTURE, John de Graff, Inc. New York, N.Y.

GENERAL, Essential

Comstock, J.P., Editor, PRINCIPLES OF NAVAL ARCHITECTURE, SNAME, 1967.

Probably the foremost textbook on the subject.

GENERAL, Essential

Hoerner, S.F., FLUID DYNAMIC DRAG, Book available only from author, 148 Busteed Dr. Midland Park, N.J.

The best single source of data for appendage drag estimates.

GENERAL, Essential

Saunders, Capt. H.E., "HYDRODYNAMICS IN SHIP DESIGN", 3 Volumes, Society of Naval Architects and Marine Engineers.

GENERAL, Essential

Taylor, D.W., THE SPEED AND POWER OF SHIPS, U.S. Government Printing Office, Third Edition, 1943.

GENERAL, Essential

Timoshenko, S., STRENGTH OF MATERIALS, Second Edition D.Van Nostrand, 1940.

GENERAL, Essential

Abbott, I.H. and Von Doenhoff, AE ., THEORY OF WING SECTIONS, INCLUDING A SUMMARY OF AIRFOIL DATA, Dover Publications Inc., New York, 1959.

GENERAL, Useful

Anonymous, "INDEX OF TECHNICAL PUBLICATIONS," National Aeronautics and Space Administration, Washington 20025.

GENERAL, Useful

Anonymous, "SYMPOSIUM: SMALL CRAFT HYDRODYNAMICS," Southeast Section of SNAME, Miami, Florida, May 27, 1966.

GENERAL, Useful

Anonymous, "WHEELED AMPHIBIAN ENGINEERING DESIGN HANDBOOK - FINAL DRAFT," July 1969, Hydronautics, Inc.,

GENERAL, Useful

Baader, J., CRUCEROS Y LANCHAS VELOCES; SU DINAMICA, PROPULSION Y NAVEGACION (CRUISERS AND FAST LAUNCHES; THEIR HYDRODYNAMICS, PROPULSION AND OPERATION), Buenos Aires, 1951 (in Spanish, English translation available.)

GENERAL, Useful

Baumeister, T., Editor, MECHANICAL ENGINEERS' HANDBOOK, McGraw-Hill Book Company, Inc. New York, N.Y.

Excellent reference.

GENERAL, Useful

Benford, H., "ECONOMIC CRITERIA IN FISH BOAT DESIGN", Presented at the Conference on Fishing Vessel Construction Materials, Montreal, October 1968, also Univ. of Michigan Department of Naval Architecture and Marine Engineering, Report No. 009.

GENERAL, Useful

Burke, I., "ANTHROPOMETRIC MEASUREMENT", SSCD Paper, The Planimeter, Nov.,1959.

GENERAL, Useful

Chapelle, H.I., YACHT DESIGNING AND PLANNING, (1936) W.W. Norton & Co., Inc., New York.

Practical approach to yacht design with good discussion of traditional wood construction, much detail and practical information with sketches.

GENERAL, Useful

DuCane, P., HIGH SPEED SMALL CRAFT, (1951, 1956 - 1964), Temple Press Books, London.

An excellent basic reference for the planing boat designer.

GENERAL, Useful

Gladding, P,R., "AN APPRECIATION OF A SMALL SHIPYARD", SNAME, New England Section, January 18, 1962.

GENERAL, Useful

Meese, G., "SMALL BOATS, DESIGN AND CONSTRUCTION," SNAME, Hampton Roads Section, April 1966.

GENERAL, Useful

Phillips-Birt, D., MOTOR YACHT AND BOAT DESIGN, W.&J. McKay and Co. Ltd., Chathar, England, 1953. American distributor, Sailing Book Service, 34 Oak Ave., Tuckahoe, N.Y. 10707.

GENERAL, Useful

Phillips-Birt, D., "NAVAL ARCHITECTURE OF SMALL CRAFT," Philosophical Library 1957 15 E. 40th St. N.Y., N.Y. 10016.

GENERAL, Useful

Simpson, D.S., "SMALL CRAFT, CONSTRUCTION AND DESIGN," (1951) Transaction, SNAME, New York, Vol. 59, p. 554.

GENERAL, Useful

Skene, N.L., ELEMENTS OF YACHT DESIGN, (updated by F.S. Kinney) (1962), Dodd, Mead & Company, New York,

One of the more useful texts. Contains scantling rules for wood construction.

GENERAL, Useful

Stoltz, J., "FUNDAMENTAL DESIGN OF STEPLESS PLANING HULLS", Motor Boating, N.Y, Feb., March, April, May, June, 1956.

Paper is reproduced totally in "How to Design Planing Hulls" Stoltz, Koelbel, Beinert, Motor Boating Ideal Series, Vol. 49, New York.

GENERAL. Useful

Tomalin, P.G., "MARINE ENGINEERING AS APPLIED TO SMALL VESSELS," SNAME, 1953, Transactions.

"This paper gives a number of nomograms and other data useful for the designer of small craft." Saunders.

GENERAL, Useful

Traung, Jan-Olof, Editor, FISHING BOATS OF THE WORLD, Vol. I, 1955, Vol. II, 1960 Vol. III, 1967, Food and Agriculture Organization of the United Nations, Published by Fishing News (Books) Ltd, London.

A valuable collection of papers containing a wealth of information on applied naval architecture.

GENERAL. Useful

Van Lammeren, W.P.A., et. al., "THE RESISTANCE, PROPULSION, AND STEERING OF SHIPS," The Technical Publishing Co., H. Stam-Haarlem-Holland.

GENERAL, Useful

(Various) "SMALL CRAFT DESIGN, AN INTENSIVE SHORT COURSE," 2 Volumes, University of Michigan, October 6-10, 1969, (Limited availability).

A comprehensive review of the state of the art of small craft design. A series of lecture notes by prominent authorities covering the engineering fundamentals involved in the hydrodynamic machinery and structural aspects of the design of small commercial, pleasure and government vessels. Hydrodynamics and structural sections emphasize planing craft while the machinery section is more generally applicable to all small craft.

GENERAL, Useful

Anonymous, "LANDING CRAFT AND THEIR EMPLOYMENT," USN Amphibious Schools 5ND GEN P-5, April 1963.

GENERAL, Background

Anonymous, "MARINE AND TERMINAL SERVICE EQUIPMENT," U.S. Army Transportation Board ST 55-178, June 1966.

GENERAL, Background

Anonymous, THE MOTOR BOAT YACHTING MANUAL, London, Temple Press, 1955.

GENERAL, Background

Anonymous, "OFFICIAL U.S. COAST GUARD RECREATIONAL BOATING GUIDE," CG-340, June 1966. Superintendent of Documents U.S. Government Printing Office, Washington, D.C. 20402. Price 45cents.

GENERAL, Background

Anonymous, "INTERIM DOCTRINE FOR RIVERINE OPERATIONS," HQ, Marine Corps, FMFM-8-1, April 1966, AD 481 135.

GENERAL, Background

Anonymous, "PROCEEDINGS OF THE ANNUAL MEETING OF THE AMERICAN TOWING TANK CONFERENCE," Issued annually.

GENERAL, Background

Ball, P.C., "PERFORMANCE TESTING," Symposium on Small Craft Hydrodynamics, SNAME, Southeast Section, May 1966.

GENERAL, Background

Bender, E.K. and Collins, A.M., "EFFECT OF VIBRATIONS ON HUMAN PERFORMANCE: A LITERATURE REVIEW", Bolt, Beranek and Newman, Inc. Report No. 1767, 15 February 1969. DDC-AD 854-136.

GENERAL, Background

Benford, H., "FUNDAMENTALS OF SHIP DESIGN ECONOMICS", University of Michigan, Department of Naval Architecture and Marine Engineering, 1965 Report B13.

GENERAL, Background

Benford, H., "MEASURES OF MERIT FOR SHIP DESIGN," University of Michigan, Dept. of Naval Architecture and Marine Engineering, 1965, Report B13.

GENERAL, Background

Benford, H., "ECONOMIC CRITERIA IN FISH BOAT DESIGN", Presented at the Conference on Fishing Vessel Construction Materials, Montreal, October, 1968.

GENERAL, Background

Botting, M., "COMPUTER PROGRAM DOCUMENTATION: HULL FORM DERIVED FROM PARENT", DTMB Report 2328, February 1967.

A FORTRAN IV computer program is described, which given a parent form described by offsets on stations, derives a new form that simultaneously satisfies stated values of the prismatic coefficient, longitudinal center of buoyancy, maximum section coefficient, breadth, and draft. The program produces a new body plan and printed and/or punched offsets. Formulas, input and output formats, FORTRAN listing, and sample problems are included.

GENERAL, Background

Boumis, T.P., "COMPUTER DEFINITION OF SHIP CHARACTERISTICS", SNAME, Marine Technology, July 1968.

An outline for the non-technician on the use of computers in design in modern practice.

GENERAL, Background

Davidson, K.S.M., "WHAT PRICE SPEED? - LONG RANGE TRENDS IN OVERSEAS TRANSPORTATION." SNAME Bulletin, February, 1955, also Chesapeake Section, SNAME, October 14, 1954.

GENERAL, Background

Den Hartog, J.P., "MECHANICAL VIBRATIONS", Fourth Edition, McGraw-Hill, 1956.

GENERAL, Background

Gabrielli, G. and Von Karman, Th., "WHAT PRICE SPEED? SPECIFIC POWER REQUIRED FOR PROPULSION OF VEHICLES," Mechanical Engineering, October 1950.

GENERAL, Background

Greene, R.T., "LEGAL RESPONSIBILITIES AND LIABILITIES OF THE SMALL BOAT DESIGNER AND MANUFACTURER," SNAME, Marine Technology, October 1968.

GENERAL, Background

Herreshoff, L.F., THE COMMON SENSE OF YACHT DESIGN, 1946, The Rudder Publishing Co., New York.

Very interesting and colorful description of traditional wood construction, principally of sailing craft.

GENERAL, Background

Hunter, A. and Eddie, G.C., "FISHING VESSEL DEVELOPMENT", Institute of Marine Engineers, 24 July 1959.

GENERAL, Background

Johnson, R., Nowacki, H., Ogilvie, T.F., "COMPUTER AIDED SHIP DESIGN", Course Notes, May 1968, Univ. of Michigan.

GENERAL, Background

Keith, H.D., "OPTIMIZATION TECHNIQUES IN DESIGN," ASME Paper No. 69-DE-14.

GENERAL, Background

Killgore, U., "ON UNIFORM MEANINGS OF COEFFICIENTS," The Planimeter SSCD, 10/64.

GENERAL, Background

King, H.F., AEROMARINE ORIGINS: THE BEGINNING OF MARINE AIRCRAFT, WINGED HULLS, AIR-CUSHION AND AIR-LUBRICATED CRAFT, PLANING BOATS AND HYDROFOILS, London, Putnam; Fallbrook, Calif., Aero Publishers, 1966.

GENERAL, Background

Knowler, H., "THE FUTURE OF THE FLYING BOAT", Fifth Louis Bleriot Lecture, Ass'n. Francaise Ing. et Techn. de l'Aeronautique, Paris, 12 March 1952; abstracted in ASNE, August 1952 Pgs. 630-638, also in Engineering (London), 14 and 21 March 1952.

GENERAL, Background

Koelbel, J.G., "THE DETAIL DESIGN OF PLANING HULL FORMS", Symposium on Small Craft Hydrodynamics, 1966, Southeast Section, SNAME.

GENERAL, Background

Korvin-Kroukovsky, B.V., THEORY OF SEAKEEPING, Published by SNAME (1961).

GENERAL, Background

Lord, L., NAVAL ARCHITECTURE OF PLANING HULLS, (1946, 1954), Cornell Maritime Press, Cambridge, Maryland.

GENERAL, Background

Manning, G.C., THE THEORY AND TECHNIQUE OF SHIP DESIGN, John Wiley and Sons, Inc. New York, N.Y. 1956.

Excellent work on basic philosophy of the designing process.

GENERAL, Background

McGoldrick, R.T. "COMMENTS ON SOME OF THE FUNDAMENTAL PHYSICAL CONCEPTS IN NAVAL ARCHITECTURE", DTMB, Report 1609, April, 1962, AD 421-900.

Shipbuilding at the present time (1961) may be regarded partly as an art and partly as a science. This report is concerned with the scientific aspects of shipbuilding and, particularly, with certain fundamental physical concepts which play a major role in the scientific methods now in use. These concepts pertain chiefly to three branches of applied mechanics; namely, fluid dynamics, elasticity, and hydroelasticity, which deal chiefly with ideal physical systems.

GENERAL, Background

Miller, E.R., et al, "A PARAMETRIC STUDY OF HIGH SPEED SUPPORT AMPHIBIANS," February 1968, Technical Report 615-1, Hydronautics, Inc.

General, Background

Milne-Thomson, L.M., THEORETICAL HYDRODYNAMICS, MacMillan Company, New York, N.Y., 1960.

GENERAL, Background

Myers, H., "MATHEMATICAL YACHT HULL LINES," SNAME, Southern California Section, Sept. 8, 1966.

GENERAL, Background

Nowacki, H., "CLASS NOTES ON COMPUTER AIDED SHIP DESIGN", used for graduate course NA 574, April 1969, Univ. of Michigan.

GENERAL, Background

Phillips-Birt, D., "THE DESIGN OF SMALL POWER CRAFT; DESIGN PROBLEMS TO BE SOLVED BY THE NAVAL ARCHITECT", The Motor Boat and Yachting, London, April, 1953.

Design requirements, Speed and power. Power and hull proportions, Hull form, Principles of engine installation, Seaworthiness and stability.

GENERAL, Background

Phillips-Birt, D., "THE DESIGN OF SEA-GOING PLANING BOATS; A DISCUSSION OF THE DIFFERENT TYPES AND THEIR CHARACTERISTICS.", The Motor Boat and Yachting, January, 1954.

"This article gives a large amount of technical information and some design rules, all in an amazingly small space. The following subjects are covered: Planing, Round Bilge or Chine? Displacement and shape of section, Beam, The Planing Angle, Calculating the power required, Stepped hulls." - Saunders.

GENERAL, Background

Phillips-Birt, D., SMALL CRAFT STABILITY AND SEAKINDLINESS, SBSR, 28 July 1955.

GENERAL, Background

Rabl, S.S., PRACTICAL PRINCIPLES OF NAVAL ARCHITECTURE, Cornell Maritime Press, 1942.

GENERAL, Background

Ragot, R.L., "AMPHIBIOUS ASSAULT LANDING CRAFT PROGRAM - BIBLIOGRAPHY AND AIDS TO DATA RETRIEVAL VOLUME 10, PART III," NAVSHIPRANDCEN, Annapolis, April 1968, pp. 328.

Volume 10 of the Prior Craft review is a complete bibliography for the report and includes update material which was arranged or classified after the publication dates on most of the vehicle data volumes. Volume 10 consists of three parts, separately bound:

Part I, Description of the AALCP Library and Aids to Data Management and Retrieval; Part II, Bibliography, Document Source, and Authors Lists; and Part III, General Subject Classification Lists and Indexes.

GENERAL, Background

Roach, C.D., "DESIGN OF WHEELED AMPHIBIANS", U.S. Army Transportation Research Command, Research Technical Memorandum No. 31, April, 1960.

GENERAL, Background

Shigley, J., MECHANICAL ENGINEERING DESIGN, McGraw-Hill, 1963.

GENERAL, Background

Silverleaf, A. and Cook, F.G.R., "A COMPARISON OF SOME FEATURES OF HIGH SPEED MARINE CRAFT", RINA, March 26, 1969.

This paper examines some of the principal features of the main types of high speed marine craft as an aid to assessing their present effectiveness. It is largely based on information from published reports and articles, but includes some data not previously available. The craft considered are those which have service speeds greater than 30 knots and which are large enough to serve a practical commercial or naval purpose: the three main types are high speed displacement or planing craft, hydrofoil ships, and hovercraft.

Subjects studied are Speed and Power, Ride Comfort, Structural Efficiency, Economic Factors, Operational Features.

GENERAL, Background

Smith, R.M., A.M.I.N.A., DESIGN AND CONSTRUCTION OF SMALL CRAFT, Published by the Technical Section, Association of Engineering and Shipbuilding Draughtsmen, 96 St. George Square, Westminister, London, 1924.

GENERAL, Background

Thompson, W.T., VIBRATION THEORY AND APPLICATIONS, Prentice-Hall, 1965.

GENERAL, Background

Traung, Jan-Olof, et al, MECHANIZATION OF SMALL FISHING CRAFT, Fishing News (Books) Ltd. 110 Fleet St. London, ~~EC 4~~.

GENERAL, Background

Van Manen, J.D., "FUNDAMENTALS OF SHIP RESISTANCE AND PROPULSION, PART A, RESISTANCE; PART B, PROPULSION", 2 Vols. Publication No. 132a of the N.S.M.B., Notes from Course held before the Netherlands Society of Engineers and Shipbuilders. Also reprinted from ISP, Rotterdam.

GENERAL, Background

Weisberg, D.E., "ENGINEERING APPLICATIONS WITH A SMALL COMPUTER", ASME Paper No. 69-DE-66.

GENERAL, Background

Anonymous, "FAO DOCUMENTATION-CURRENT INDEX OF ALL FAO PUBLICATIONS", Issued monthly and summarized annually. Food and Agriculture Organization of the United Nations, Documentation Center, Via della Terme di Caracalla 00100 Rome, Italy.

GENERAL,

Goldman, D.E., and Von Gierke, H.E., "THE EFFECTS OF SHOCK AND VIBRATION ON MAN", Naval Medical Research Institute, January 1960.

GENERAL,

Hudson, R.G., THE ENGINEERS MANUAL, John Wiley and Sons, New York.

Useful general reference.

GENERAL,

Lang, T.G., "THE DESIGN OF HYDROFOIL CROSS SECTIONS AS A FUNCTION OF CAVITATION NUMBER, LIFT, AND STRENGTH", AIAA Paper No 69-396.

GENERAL

Anonymous, "BOATS OF THE UNITED STATES NAVY", NAVSHIPS 250-452, May, 1967
For sale by Supt. of Documents, U.S. Government Printing Office, Washington, D.C. 20402
Price $2.75.

VESSELS, Useful

Adamson, G. and Van Patten, D., "MOTOR TORPEDO BOATS: A TECHNICAL STUDY," USNI, July 1940
Vol. 66, PP 976 - 996.

VESSELS, Background

Anonymous, "BRAVE CLASS FAST PATROL BOATS. RESISTANCE, RUNNING RISE AND TRIM WITH AND WITHOUT TRANSOM FLAP. FURTHER EXPERIMENTS", Admiralty Experiment Works, Report No.44/60

VESSELS, Background

Anonymous, "BOLD PIONEER. RESISTANCE, RUNNING RISE AND TRIM WITH TRANSOM FLAP. ALSO FULL SCALE TRIALS", Admiralty Experiment Works Report No. 35/55.

VESSELS, Background

Anonymous, "DARK CLASS FAST PATROL BOATS. RESISTANCE, RUNNING RISE AND TRIM WITH AND WITHOUT TRANSOM FLAP", Admiralty Experiment Works, Report No. 68/56.

VESSELS, Background

Anonymous, "SPECIAL SHIP TYPES," (Hydrofoils, Hydroskimmer, Air Cushion Vehicles, Hovercraft.) 9 August 1968, Scientific Documentation Division, Naval Ship Systems Command.

Some references to Waterjets, etc.

VESSELS , Background

Anonymous, "SHALLOW DRAFT BOATS," Army Materiel Command, 1967. AD 809033.

VESSELS, Background

Anonymous, "LIGHT ALLOY PATROL LAUNCH," Engineer, April 1953.

VESSELS, Background

Anonymous, "KENNER SKI BARGE," Army Concept Team in Vietnam APO San Francisco, 96384, AD 826893.

VESSELS, Background

Anonymous, "FIRE TEAM ASSAULT BOAT EVALUATION, MCLFDC SPECIAL TASK NO. TM-01-66", September 1967, Marine Corps Landing Force Development Center, Marine Corps Schools, Quantico, Va. AD 819929.

VESSELS, Background

Anonymous, "BOATS TODAY", Universal Motor Company, Oshkosh, Wisc., 1953.

"Containing detailed designs and descriptions of 101 interesting boats created by 53 American and Canadian naval architects." - Saunders.

VESSELS, Background

Anonymous, "A SHORT HISTORY OF THE REVIVAL OF THE SMALL TORPEDO BOAT (C.M.B.'S) DURING THE GREAT WAR," John I. Thornycroft & Co., Limites London, May 1920.

VESSELS, Background

Apel, A.A., and Lauterbach, N.H., "REPORT ON STUDIES TO DETERMINE THE UTILITY OF THE THREE POINT SUSPENSION TYPE HULL IN THE DESIGN OF LANDING CRAFT," September 20th, 1949, ONR Final Report Project NR 251-100, Ventnor Boat Corporation, Atlantic City, N.J.

VESSELS, Background

Baier, L.A., "AMERICAN RIVER TOWBOATS", ISP, (Date Unknown)

VESSELS, Background

Beach, D.D., "POWER BOAT FORM," The Rudder, January 1954, pp. 38-43, 90.

"This is an excellent resume of seven typical modern powerboat forms, represented by lines drawings in each case, with the hydrodynamic and practical reasons for their various features and characteristics". Saunders

VESSELS, Background

Bucklew, P.H., "NAVY SMALL CRAFT IN MARKET TIME," ASNE Journal, June 1966.

Small craft in Vietnam.

VESSELS, Background

DuCane, P., "HIGH SPEED SMALL MARINE CRAFT", Institution of Mechanical Engineers, Derby, England, Transactions, 1954.

VESSELS, Background

DuCane, "AN ALL-WELDED ALUMINUM HIGH SPEED MOTOR LAUNCH", British Welding Journal, January, 1956.

VESSELS, Background

DuCane, P., "THE PLANING PERFORMANCE, PRESSURES AND STRESSES IN A HIGH SPEED LAUNCH," Institution of Naval Architects, June 1956, Vol.98.

Discussed design, construction and testing of a 68 ft. high speed (40KT) air/sea rescue boat. Trials included measurement of planing pressures and stresses, and craft accelerations. Construction was basically aluminum but side panels were FRP.

VESSELS, Background

Eldredge, A.G., "INDICATED DIRECTION FOR NEW CRAFT DEVELOPMENT," ASNE Journal, June 1966.

U.S.N. Counterinsurgency craft.

VESSELS,Background

Fox, U., <u>THOUGHTS ON YACHTS AND YACHTING, PART 3</u>, Charles Schribners, London 1939.

VESSELS,Background

Garden, W., "THE SEAGOING POWER BOAT," Yachting, October 1957.

VESSELS, Background

Hadeler, W., "MOTOR TORPEDO BOATS - SCHNELLBOOTE (MOTOR PEDOBOOTE - SCHNELLBOOTE)," VDI-Zeitschrift, Vol 83, No. 32, 12 August, 1939. DTMB Translation No. 88 by M.C. Roemer, January 1940.

VESSELS, Background

Hafstrom, H.G., and Pehrsson, L., "A SWEDISH ALL-GAS-TURBINE TORPEDO BOAT WITH CONTROLLABLE PITCH PROPELLERS," ASME Transactions, Paper No. 66-GT/M-30.

VESSELS, Background

Hagen, A., "VIBRATION TRIALS ON ALUMINUM AND STEEL LANDING CRAFT - LCM (8)", NSRDC Report 2756, March 1968, AD-830-381.

VESSELS, Background

Hanson, H.C., "FISHING VESSELS OF THE PACIFIC COAST OF AMERICA", Transaction, SNAME 1954.

VESSELS, Background

Herreshoff, L.F., "N. G. HERESHOFF AND SOME OF THE BOATS HE DESIGNED," The Rudder.

"This comprises a series of articles, subdivided into about 12 chapters, which ran more or less regularly through the years 1949 and 1950", Saunders.

VESSELS, Background

Hoyt, A.N. and Welling, F.J., "STANDARDIZATION TRIALS OF LCVP(K) PARTIAL AIR SUPPORT LANDING CRAFT," DTMB Report 1815, February 1964. Prepared for the Bureau of Ships. Distributed only upon authorization.

This report contains the results of standardization trials conducted on the LCVP(K) within the period 6 August through 12 November 1963. The data contained herein include trial results that show the powering characteristics of the craft as originally built.

In addition, some data on the modified hull, as a planing craft, are included. Trials conducted subsequent to 12 November 1963, all of which were with the modified hull, will be contained in a supplemental report.

VESSELS, Background

Huet, G.O., "DEVELOPMENT OF A HIGH SPEED MOTOR BOAT FOR USE IN ROUGH WATERS", Paper Presented at SNAME Gulf Coast Section, April 1959.

VESSELS, Background

Hugli, W.C. Jr., "A MOTOR TORPEDO BOAT COMPARISON", ETT (Davidson Laboratory) Report No. 54, November 12, 1940.

VESSELS,Background

Kendall, W.M., "STANDARDIZATION AND ROUGH WATER RESULTS FROM TRIALS OF AN EXPERIMENTAL PLANING BOAT EQUIPPED WITH A STABILIZER FOR TRIM CONTROL", DTMB Test Report P-016-H-01, September 1964. Distributed only upon BuShips authorization.

VESSELS, Background

Klemmer, E.T. and Johnson, P.K., "TRIALS CONDUCTED ON A GERMAN R 130-CLASS MINE SWEEPER EQUIPPED WITH VOITH-SCHNEIDER CYCLOIDAL PROPELLERS", DTMB Repcrt No. 649, December 1948.

VESSELS, Background

Latimer, J.P., "CHARACTERISTICS OF COAST GUARD POWERED BOATS", SNAME, Ches. Section, 13 October 1951 abstracted in Members Bulletin, January 1952.

VESSELS, Background

Leveau, C.W. " ALL ALUMINUM FISHING VESSEL", SSCD, The Planimeter, May, 1967

VESSELS, Background

Long, D.M., "PROGRESS REPORT - PLANING HULL AMPHIBIAN," Dair M. Long, Naval Architects and Marine Engineers, P.O. Box 385, Newport Beach, Calif.

VESSELS, Background

McGowan, R.P. and Vanderlip, E.G., "FEASIBILITY INVESTIGATION OF DELTA RECON VEHICLE", U.S. Army Limited War Laboratory, Aberdeen Proving Ground, Md. 21005, Tech Report No. 66-08, AD 804781.

VESSELS, Background

Meese, G., "RESEARCH CATAMARANS," The Planimeter, November 1961, SSCD.

VESSELS, Background

Meyer, E.R., "RESULTS OF STANDARDIZATION, TACTICAL, AND ROUGH WATER TRIALS ON FIVE AIRCRAFT RESCUE BOATS," NSRDC Report No. 1108, April 1957, AD-151-411. Distributed only on authorization of Bureau of Ships.

"Full scale trial results including an inverted Vee hull. Inverted Vee design was heavily loaded and not an optimum design." - J.E. Bowker Assoc.

VESSELS, Background

Miller, R.T. (Capt., U.S.N.), "MODERN MILITARY SMALL CRAFT," Yachting, February 1968.

VESSELS, Background

Mitchell, A.R., "SHALLOW DRAUGHT SHIPS," Transactions, Institution of Naval Architects, 1951.

VESSELS, Background

Nelson, R.T. and Currier, D.G., "OPERATION OF COAST GUARD PATROL BOATS IN SOUTHEAST ASIA," ASNE Journal, June 1966.

Vessels, Background

Peters, S.A., "DEVELOPMENT OF THE MOTOR TORPEDO BOAT", SNAME, Ches. Section, 3 Nov. 1948, abstracted in Members Bulletin, January, 1949.

VESSELS, Background

Phelan, K., "THE FAST FIGHTING SHIP", Motor Boat and Yachting, Nov.1 and 15, 1968.

Coastal Forces in W.W. II. Patrol Boats.

VESSELS, Background

Quigley W.B. and Ruthven, B., "EOD BOAT EVALUATION (PRELIMINARY)," U.S. Navy Mine Defense Laboratory Report 1-64, July 1964.

An evaluation was conducted at the U.S.Navy Mine Defense Laboratory on six proposed swimmer support boats by evaluators from various Navy commands in an effort to select one boat that would satisfy operational requirements of Explosive Ordinance Disposal (EOD) divers. None of the boats evaluated satisfy all of the desired requirements for EOD operations. It is presently planned to procure three new craft fabricated in accordance with evaluation results and perform comparative tests at the U.S.Navy Mine Defense Laboratory.

VESSELS, Background

Reinhardt, J.J., "POWER BOAT DESIGN, FACTORS IN HULL DESIGN AND ARRANGEMENT," SNAME, N.Y. Section, January 14, 1967.

VESSELS, Background

Revans, J.T. & Gentry, A.A.C., "THE 'BRAVE' CLASS FAST PATROL BOAT", INA, VOL 102, 1960.

VESSELS, Background

Roorda, A., and Neuerburg, E.M., SMALL SEAGOING CRAFT AND VESSELS FOR INLAND NAVIGATION, The Technical Publishing Co. H. Stam, Haarlem, Holland, 1957.

VESSELS, Background

Sargent, J.F., "UNITED STATES ARMY SHALLOW-DRAFT BOAT PROGRAM," SNAME, Marine Technology April 1968.

VESSELS, Background

Schubert, H.J., "GERMAN E-BOATS OF WORLD WAR II - HISTORY, DESIGN AND OPERATION", SNAME, Pacific N.W. Section, November 15, 1962.

VESSELS, Background

Schuller, R.E., "RESEARCH VESSEL DESIGN," The Planimeter, February 1965, SSCD.

VESSELS, Background

Scott-Paine, H., "SOME OF THE ASPECTS AND PROBLEMS OF THE DEVELOPMENT OF HIGH-SPEED CRAFT AND ITS MACHINERY", Journal and Proceedings Vol. 141, March 1939. Institution of Mechanical Engineers, Storey's Gate, St. Jame's Park, London, SWI.

VESSELS, Background

Shaw, P.S., "FULL SCALE TRIALS ON THE RCN 27 FOOT MOTOR SEABOAT," 4 June 1954, National Research Council of Canada.

VESSELS, Background

Stenson, R.J. and Sparks, G.T., "ARCKX-1 CONTROL AND MANEUVERING TRIALS AND VARIATION OF CENTER OF GRAVITY TESTS", NSRDC T&E Report No. 128-H-03, November 1967.

VESSELS, Background

Thornycroft, J.E. and Bremner, "COASTAL MOTOR BOATS," INA, October, 1925.

VESSELS, Background

(Unknown), "DEVELOPMENT OF SHALLOW DRAFT BOATS", Army Materiel Command, 1965 AD 455033L, (approval of AMC required).

VESSELS, Background

Varner, I.S., "ARMY BEACH DISCHARGE LIGHTER", ASNE Journal, February, 1968, Reprinted from "The Military Engineer", September-October, 1967, Society of American Military Engineers.

VESSELS, Background

Wilson, C.J., "STANDARDIZATION TRIAL RESULTS OF LCVP(K), MODIFIED TO A PLANING BOAT AND COMPARISON OF PERFORMANCE WITH ORIGINAL RESULTS," DTMB Report 1815-1, February 1964. Prepared for the Bureau of Ships. Distribution only upon their authorization.

Standardization trials were conducted on LCVP(K), modified to a planing hull, as part of a study of partial air support craft. Speed, RPM and shaft horsepower were determined under controlled conditions on a measured course. The data in this report are supplemental to information previously reported on the performance of LCVP(K) as originally designed.

VESSELS, Background

Winter, R., "PROBLEMS INVOLVED IN THE DESIGN OF 3 RECENT FISHING VESSELS," The Planimeter, July and August, 1967, SSCD.

VESSELS, Background

Witter, R.W., "DESIGN AND CONSTRUCTION OF THE UNITED STATES COAST GUARD 44 FOOT MOTOR LIFEBOAT", ASNE Journal, February 1964.

VESSELS,Background

Witter, R.W., "COAST GUARD RESCUE CRAFT", ASNE Journal, August 1966.

VESSELS,Background

Witter, R.W., "RESCUE BOAT DEVELOPMENT," ASNE Journal, December 1967.

VESSELS, Background

Anonymous, "AN ALUMINUM OFFSHORE RACER", Yachts and Yachting, February,1955.

VESSELS

Mannare, K.J., "CATAMARAN, HYDROFOIL AND BOAT DESIGNS", Sailing Book Service, New York, N.Y..

VESSELS

Teale, FAST BOATS , Sailing Book Service, New York.

VESSELS,

Sarchin, T.H. and Goldberg, L.L., "STABILITY AND BUOYANCY CRITERIA FOR U.S. NAVAL SURFACE SHIPS," SNAME, Transactions, 1962.

Methods and criteria used in assessing stability and buoyancy for naval ships. Methods could be applied and criteria adjusted, for small craft.

STATICS, Essential

Anonymous, "WEIGHT CLASSIFICATION FOR BOATS OF THE U.S. NAVY" NAVSHIPS 0929-000-4010, 1965 Naval Ship Engineering Center, Washington, D.C.

STATICS, Useful

Cloyd, C.E., "FLOODABLE LENGTH CURVE, METHOD OF INTEGRAL CURVES", SNAME, Hampton Roads Section, 6 December 1957.

STATICS, Useful

Killgore, U., "FLOODABLE LENGTH OF NON-PRISMATIC HULLS", The Planimeter, April, May, June 1963, SSCD.

STATICS, Useful

Marwood, W.J. and Bailey, D., "TRANSVERSE STABILITY OF ROUND-BOTTOMED HIGH SPEED CRAFT UNDERWAY", Ship Report 98, October 1968. National Physical Laboratory, England. Ship Division.

STATICS, Useful

Monk, E., "WEIGHT AND THE MOTOR BOAT," Yachting, January 1955, pp. 118-120.

The author gives typical percentages for ten weight groups in the hull only of V-bottom and round bottom hulls, as well as percentages for 12 groups in the total weight of an "average cruiser".

STATICS, Useful

Phillips, E.F., "ANTICIPATED WEIGHT REDUCTION OF STRUCTURE CONSTRUCTED WITH WELDED ALUMINUM ALLOY VERSUS WELDED STEEL", The Society of Aeronautical Weight Engineers, Inc., May 1967, Technical Paper No. 603.

STATICS, Useful

Rahola, J., "THE JUDGING OF THE STABILITY OF SHIPS," (in English) Printed in Finland, 1939
YHTEISKIRJAPAINO
OSAKEYHTIO.

Original paper difficult to obtain. Material is included in various articles in Fishing Boats of the World.

STATICS, Useful

Schneider, R.F., "METHODS OF DETERMINING CENTERS OF BUOYANCY," The Planimeter SSCD 8/15.

STATICS, Useful

Anonymous, "NOTES ON FUNDAMENTAL CONCEPT OF DAMAGE STABILITY," U.S. Coast Guard, MMT, Hull Scientific, January 13, 1960.

STATICS, Background

Bhattacharyya, R. "COMPUTER APPLICATIONS IN HULL FORM AND STABILITY CALCULATIONS", September, 1969, Report No. 038 University of Michigan, Department of Naval Architecture also SNAME, Great Lakes and Great Rivers Section, October 2, 1969.

STATICS, Background

Bonebakker, J.W., "INITIAL METACENTRIC HEIGHT OF SMALL SEAGOING SHIPS AND THE INACCURACY AND UNRELIABILITY OF CALAULATED CURVES OF RIGHTING LEVERS," International Shipbuilding Progress Vol. No. 40, December 1957.

STATICS, Background

Colvin, T.E., "THE IMPORTANCE OF WEIGHT IN SMALL CRAFT DESIGN AND CONSTRUCTION," Paper No. 666, Society of Aeronautical Weight Engineers Inc., P.O. Box 60024, Terminal Annex, Los Angeles, Calif., 90054.

STATICS, Background

Comstock, J.P., and Robertson, J.B., "SURVIVAL OF COLLISION DAMAGE VERSUS THE 1960 CONVENTION ON SAFETY OF LIFE AT SEA," SNAME Transactions, 1961.

STATICS, Background

Miller, W.C., "CONSTRUCTION OF A MODEL AND ITS USE IN AN INVESTIGATION OF DAMAGED STABILITY", SNAME, Northern Calif., February 14, 1957.

STATICS, Background

Norby, R.A., "STABILITY PROBLEMS OF COASTAL VESSELS", ISP Vol 11, No. 121, Sept 1964.

STATICS, Background

Obrastsov, W.B., "METHOD OF CALCULATING THE RESTORING MOMENT OF A MOVING SHIP", Translated by Michail Aleksandrov and Geoffrey Gardner, University of Michigan, Dept. of NA&ME, No. 056, March 1970.

STATICS, Background

Obrastson, W.B., "EXPERIMENTAL INVESTIGATION OF INFLUENCE OF SHIP'S SPEED ON ITS TRANSVERSE STABILITY", Translation by Michail Aleksandrov and Geoffrey Gardner, Dept. of NA&ME, University of Michigan. No. 056, March 1970.

STATICS, Background

Pauling, J.R., "THE TRANSVERSE STABILITY OF A SHIP IN A LONGITUDINAL SEAWAY," SNAME Journal of Ship Research, March 1961.

STATICS, Background

Sobolev, G.V., and Obrastsov, W.B., "THE CALCULATION OF THE RIGHTING MOMENT FOR A MOVING SHIP WITH AN INITIAL ANGLE OF HEEL", Translation by Michail Aleksandrov and Geoffrey Gardner, University of Michigan, Dept. of NA&ME. No. 056 March 1970.

STATICS, Background

Wright, C.L., "THE SIGNIFICANCE OF METACENTRIC HEIGHT", January 1969, New England Section, SNAME.

STATICS, Background

Clement, E.P., "ANALYZING THE STEPLESS PLANING BOAT", DTMB Report 1093, AD 124 - 298 November, 1956.

This report gives methods of presenting and using information on the hull forms and model performance of planing boats to guide the design of future boats. The effect on performance of variations in some of the primary planing boat parameters are illustrated and discussed. A design method is proposed, and data are presented to assist in making correct design decisions.

RES, Essential

Savitsky, D., "HYDRODYNAMIC DESIGN OF PLANING HULLS", Davidson Laboratory Report 1000, December 1963, Also Marine Technology, Vol. 1, No. 1, October 1964, SNAME.

The elemental hydrodynamic characteristics of prismatic planing surfaces are discussed and empirical planing equations are given which describe the lift, drag, wetted area, center of pressure, and porpoising stability limits of planing surfaces as a function of speed, trim angle, deadrise angle, and loading. These results are combined to formulate simple computational procedures to predict the horsepower requirements, running trim, draft, and porpoising stability of prismatic planing hulls. Illustrative examples are included to demonstrate the application of the computational procedures.

RES , Essential

Anonymous, "INDEX TO MODEL AND EXPANDED RESISTANCE DATA SHEETS NO. 1-175," Technical Research Bulletin No. 1-14 of the Society of Naval Architects and Marine Engineers,

RES,Useful

Anonymous, "SMALL CRAFT DATA SHEETS, 1 THROUGH 16," SNAME, 1967.

RES, Useful

Ashton, R., "EFFECT OF SPRAY STRIPS ON VARIOUS POWER BOAT DESIGNS", Technical Memorandum No.99 of Experimental Towing Tank, February 1949, Stevens Institute of Technology.

"This report is generously illustrated with excellent photographs of both models and full-scale motorboats, showing the spray formation very clearly. The appendix contains useful design comments, with sketches-a rather unusual feature for a report of this kind." - Saunders.

RES, Useful

Beys, P.M., "SERIES 63 ROUND BOTTOM BOATS," Davidson Lab. S.I.T., Report No. 949, April 1963, AD 412-788.

RES, Useful

Blount, D., "RESISTANCE AND PROPULSION CHARACTERISTICS OF A ROUND-BOTTOM BOAT (PARENT FORM OF TMB SERIES 63)," DTMB Report 2000, March 1965, AD 614 565.

This report gives the resistance and propulsion characteristics of the TMB Series 63 parent form. The data cover the effects of displacement, initial trim, and appendages. An example of the procedure to be followed in making a horsepower estimate using these data is included.

RES, Useful

Chey, Y., "MODEL TESTS OF A SERIES OF SIX PATROL BOATS IN SMOOTH AND ROUGH WATER," Davidson Laboratory Report 985, October 1963, revised August 1964, BuShips, DTMB Contract NObs 78349, Task Order 14 DL Project 2648(223), AD 605-309.

Three round-bottom models and three hard-chine models with length-beam ratios of 3, 4, and 5 in each group and with constant displacement, were tested in smooth water and in irregular waves of Sea States 3 and 5. The Hard-chine model and the round-bottom model of length-beam ratio 4 were used to evaluate relative broaching tendencies in regular following waves.

The resistance data in smooth and rough water were expanded to boat weights of 55,000 pounds. The measured values of accelerations at the forward quarter point and LCG position and of heave, are presented. In the evaluation of relative broaching tendencies in regular following waves, experimental results were combined with theoretical results to derive indices of broaching.

RES, Useful

Clement, E.P., "EFFECTS OF LONGITUDINAL BOTTOM SPRAY STRIPS ON PLANING BOAT RESISTANCE", DTMB Report 1818, February 1964, AD 434-132.

Experiments were made to determine the effects on planing boat resistance of several configurations of longitudinal bottom spray strips. It was found that such strips extending aft from the bow about 70 percent of the hull length decreased the resistance somewhat at high speed but increased the resistance at low speed. The performance was noticeably improved by sharpening the edges of the spray strips. An experiment was also made with bottom spray strips extending only forward of the high-speed stagnation line. This arrangement gave a 6-percent reduction in resistance at high speed with no increase in resistance at low speed.

RES, Useful

Clement, E.P., "A CRITICAL REVIEW OF SEVERAL REPORTS ON ROUND BOTTOM BOATS", DTMB, Technical Note 40, 1963.

A previous report by H.F. Nordstrom gives comprehensive information about the hull forms and resistances of a considerable number of round-bottom boats. This report also shows that the resistance of these craft is determined mainly by the value of the hull form parameter, L/ 1/3. Data on round-bottom boats from a number of other sources were examined to see if they could be correlated with the Nordstrom data. It was hoped thereby to produce graphs which would be useful for design and for the prediction of boat performance for a wider range of speeds. A report by Marwood and Silverleaf was found to contain data which could be used to prepare a series of graphs useful for predicting the resistances of boats of a wide range of sizes up to quite high speeds.

The data from the other sources examined was found to be of little value for the present purpose. Generally this was either because of the evident presence of laminar flow on the models, or because the models were fitted with skegs of unknown size and of unknown influence on the resistance.

RES, Useful

Clement, E.P., "THE ANALYSIS OF STEPLESS PLANING HULLS", SNAME Ches. Section, Apr. 1951, abstracted in SNAME Members Bulletin, October, 1951.

RES, Useful

Clement, E.P. and Tate, C.W., "SMOOTH WATER RESISTANCE OF A NUMBER OF PLANING BOAT DESIGNS," DTMB Report 1378, October 1959.

Models of a number of different planing boat designs were towed in smooth water to provide data for guidance in designing aircraft rescue boats and similar high-speed craft. Resistance, trim, rise, and wetted surface were determined for each design for either standard or comparable conditions of hull loading and center of gravity location.

The test data, lines, and hull form characteristics for each design are presented in a design data sheet. Resistance of the different designs are compared, and reasons given for significant differences.

RES, Useful

Clement, E.P., and Pope, J.D., "GRAPHS FOR PREDICTING THE RESISTANCE OF LARGE STEPLESS PLANING HULLS AT HIGH SPEEDS", DTMB Report 1318, April 1959, AD 224-687.

Graphs are presented for predicting the resistance of stepless planing hulls at high speeds. These graphs were developed from semiempirical equations derived by the National Aeronautics and Space Administration for the pure planing lift and center-of-pressure on flat and V-bottom planing surfaces. The development of the graphs is explained, and an example is presented to show the process of estimating the resistance of a typical large planing boat. A comparison of the resistance curves determined from model tests with the values of high-speed resistance obtained from these graphs shows good agreement.

RES, Useful

Clement, E.P. and Pope, J.D., STEPLESS AND STEPPED PLANING HULLS-GRAPHS FOR PERFORMANCE PREDICTION AND DESIGN," DTMB Report 1490, January 1961, AD 254-006.

This report presents graphs by means of which the high-speed resistance and trim of conventional and stepped planing boats of a wide range of sizes and proportions can be determined. Graphs which give guidance in selecting parameters which will result in optimum planing performance are also presented. Values for the graphs were obtained from equations for the lift, center of pressure, and resistance of prismatic planing bottoms which were previously developed by the National Aeronautics and Space Administration and the David Taylor Model Basin.

RES, Useful

Clement, E.P. and Blount, D.L., "RESISTANCE TESTS OF A SYSTEMATIC SERIES OF PLANING HULL FORMS," SNAME Transactions 1963, Vol. 71.

This paper presents the results of resistance tests of five planing boat models of different length-bean ratio. Each model was tested at a number of loads and LCG locations. The results are presented as curves of angle of attack and resistance-weight ratio versus Froude number. The resistance data have been corrected to boat weights of 10,000 and 100,000lb. The measured values of wetted lengths, wetted surface, and rise of CG are also presented in tabular form. The conditions at which the models porpoised at high speed were determined and a graph defining the stable and unstable regions is included. A method was ascertained of collapsing the high-speed resistance data from the tests of the series into a single graph. A simplified prediction method was then developed which can be used to determine the high-speed resistance of planing hulls of a wide range of proportions, and of any gross weight from 1,000 to 100,000 lb. RES, Useful

Clement, E.P., "GRAPHS FOR PREDICTING THE IDEAL HIGH-SPEED RESISTANCE OF PLANING CATAMARANS", DTMB Report 1573, November 1961, AD 269-762.

This report presents graphs by means of which the high-speed resistance and trim of catamaran planing hulls of a wide range of sizes and proportions can be determined. Graphs which give guidance in selecting parameters which will result in optimum planing performance are also presented. Values for the graphs were obtained from equations for the lift, center of pressure, and resistance of prismatic planing bottoms which were previously developed by the National Aeronautics and Space Administration and the David Taylor Model Basin.

RES, Useful

Clement, E.P., "THE DESIGN OF CAMBERED PLANING SURFACES FOR SMALL MOTORBOATS", NSRDC Report 3011, March 1969, AD 686-690.

The procedure is given for designing cambered and swept planing surfaces for small stepped motorboats of the dynaplane type. A design example is included in the report.

RES, Useful

Clement, E.P., "GRAPHS FOR DESIGNING CAMBERED PLANING SURFACES HAVING THE JOHNSON THREE-TERM CAMBER SECTION RECTANGULAR PLANFORM AND ZERO DEADRISE", NSRDC Report 3147, Oct. 1969.

The theory of Johnson was used to calculate the performance characteristics of cambered planing surfaces having a three-term camber section, rectangular planform, and zero deadrise. These characteristics are presented in a series of graphs which are suitable for design purposes.
RES. Useful

Clement, E.P., and Pope, J.D., "GRAPHS FOR PERFORMANCE PREDICTION AND DESIGN OF STEPPED AND STEPLESS PLANING HULLS. DTMB Report 1490, January, 1961. AD 254-006.

RES, Useful

Clement. E.P., "MERIT COMPARISONS OF THE SERIES 64 HIGH SPEED DISPLACEMENT HULL FORMS," DTMB Report 2129, November 1965. AD 624-688

Values of residuary resistance from model tests were previously presented for a methodical series of slender displacement hull forms which had been tested up to high speeds. The present report gives values of total resistance for the hull forms of the series so that their relative merits can be readily seen. The value of total resistance were calculated for boats of 200-ton displacement to facilitate comparison with resistance data for U.S. Navy hydrofoil boats. The Form of the data presentation is such as to provide guidance for the design of high-speed displacement and catamaran hull forms.

RES, Useful

Clement, E.P., "REDUCTION OF PLANING BOAT RESISTANCE BY DEFLECTION OF THE WHISKER SPRAY," DTMB Report 1929, November 1964. AD 454-407.

Additional experimental verification is presented of the reduction of planing boat drag which can be achieved by using longitudinal strips foward of the stagnation line to deflect the whisker spray from the hull surface. In addition, graphs for determining the high-speed positions of the spray boundary and stagnation lines are given, to assist designers in locating spray deflectors on planing boats in the most effective positions.

RES, Useful

Clement, E.P., "SCALE EFFECT ON THE DRAG OF A TYPICAL SET OF PLANING BOAT APPENDAGES," DTMB Report 1165, August 1957. AD 144-986.

Geometrically similar models of a set of planing boat appendages were manufactured in four different sizes, and tested to determine the scale effect error involved in predicting appendage drag. Data from the test of the smallest appendage set when mounted on a hull model were fairly consistant with data from the three larger appendage sets when mounted on a friction plane. The results indicate that use of an extrapolator which is appreciably steeper than Schoenherr's line at Reynolds numbers below about 10^6 would give more nearly correct predictions of full scale appendage resistance.

RES, Useful

Clement, E.P., "HOW TO USE THE SNAME SMALL CRAFT DATA SHEETS FOR DESIGN AND FOR RESISTANCE PREDICTION", T & R Bulletin 1-23, SNAME, 1963.

RES, Useful

Clement, E.P., "GRAPHS FOR PREDICTING THE RESISTANCE OF ROUND BOTTOM BOATS", ISP Vol. 11 No. 114, February 1964.

RES, Useful

Fridsma, G., "MODEL TESTS OF A ROUND BOTTOM PATROL BOAT IN SMOOTH AND ROUGH WATER," Davidson Laboratory Report LR-1074, June 1965, David Taylor Model Basin Contract N600(167) (61303)(x), J.O.4, DL Project 2993/236, AD 616-634.

Performance characteristics in smooth and rough water are presented for a round bottom patrol boat, based on tests conducted on a 1/16 scale model (No. 5016). Comparison is made with another model of smaller length/beam ratio (Model No. 4927).

RES, Useful

Gertler, M., A REANALYSIS OF THE ORIGINAL TEST DATA FOR THE TAYLOR STANDARD SERIES, DTMB Report 806, March 1954. May be obtained from the U.S. Government Printing Office for $3.50. Catalog D211.9:806.

RES, Useful

Graff, W., Kracht, A. and Weinblum, G., "SOME EXTENSIONS OF D.W. TAYLOR'S STANDARD SERIES", SNAME 1964.

RES, Useful

Kafali, K., "THE POWERING OF ROUND BOTTOM MOTORBOATS," ISP, February 1959.

RES, Useful

Koelbel, J.G., "A COMPARISON OF SEVERAL POWERING METHODS", The Planimeter, December, 1961, Society of Small Craft Designers.

Comparison of several power prediction formulas with results of model and full scale tests of a number of craft.

RES, Useful

Marwood, W.J. and Bailey, D., "DESIGN DATA FOR HIGH SPEED DISPLACEMENT HULLS OF ROUND-BILGE FORM", Ship Report No. 99, February 1969, National Physical Laboratory.

RES, Useful

Nordstrom, H.F., "SOME TESTS WITH MODELS OF SMALL VESSELS," 1951 (in English) Publication No 19 of the Swedish State Shipbuilding Experimental Tank, Goteborg, Sweden.

"Data are given with body plans and graphs embodying test results on 27 different models of round bottom and V-bottom boats (with chines). On pages 15 and 16 the report gives data as to the resistance of appendages and the probable values of propulsive coefficients."-Saunders.

RES, Useful

Ridgely-Nevitt, C., "THE DEVELOPMENT OF PARENT HULLS FOR A HIGH DISPLACEMENT-LENGTH SERIES OF TRAWLER FORMS", SNAME, 1963.

RES, Useful

Ridgely-Nevitt, C., "THE RESISTANCE OF A HIGH DISPLACEMENT-LENGTH RATIO TRAWLER SERIES," SNAME 1967.

RES, Useful

Savitsky, D., and Neidinger, J., "WETTED AREA AND CENTER OF PRESSURE OF PLANING SURFACES AT VERY LOW SPEED COEFFICIENTS," Davidson Laboratory Report 493, Sherman M. Fairchild Publication Fund Paper FF-11, Institute of Aeronautical Sciences, New York, N.Y..

RES, Useful

Stoltz, J.; Koelbel, J.G.; Beinert, J., "HOW TO DESIGN PLANING HULLS", Vol. 49 Ideal Series, Motor Boating, 959 Eighth Ave. New York, N.Y. 10019.

RES, Useful

Takagi, A., et. al., "GRAPHICAL METHODS FOR POWER ESTIMATION OF FISHING BOATS", 1950, Fisheries Agency, Japan.

RES, Useful

Todd, F. H., "TABLES OF COEFFICIENTS FOR A.T.T.C. MODEL-SHIP CORRELATION AND KINEMATIC VISCOSITY AND DENSITY OF FRESH AND SALT WATER," SNAME T & R BULLETIN 1-25.

RES, Useful

Toro, A.I., "SHALLOW-WATER PERFORMANCE OF A PLANING BOAT," Southeastern Section, SNAME, April 1969. Also University of Michigan, Department of Naval Architecture and Marine Engineering Report No. 019, April 1969.

RES, Useful

Traung, Jan-Olof, Compiler, "FISHING BOAT TANK TESTS", Technology Branch FAO Fisheries Division.

RES, Useful

Van Mater, P.R. Jr., "BEHAVIOR OF THREE PLANING BOAT DESIGNS IN CALM AND ROUGH WATER", August 1963, Davidson Laboratory Report No. 854, AD 422 495.

RES, Useful

Yeh, H.Y.H., "SERIES 64, RESISTANCE EXPERIMENTS ON HIGH-SPEED DISPLACEMENT FORMS," SNAME, Chesapeake Section, 9 December 1964. Also Marine Technology, July 1965, SNAME.

RES, Useful

Andreoni, A., "COMPARATIVE TESTS OF THREE SIMILAR MODELS OF RIVER BOAT", ISP, Vol. 11, March 1964, No. 115.

RES, Background

Angeli, J.C., "EVALUATION OF THE QUALITY OF PLANING BOAT DESIGN", SNAME Southeast Section, February 18, 1971.

The purpose of the present paper is to provide Planing Boat Designers with a straightforward method for the comparison of boat performance whatever the displacement and speed might be, and similarly, to evaluate the probable merit of a project at an early stage of the design.

RES, Background

Anonymous, "LARGE CONVERTIBLE M.T.B./M.G.B. 1947/48 PROGRAMME. HARD CHINE FORM (P 5701) FINAL EHP CURVES, WAVE FORMATION AND RUNNING ATTITUDE," AEW Haslar, September 1952, Report No. 34/52.

Model Test of 116' X 24' Boat.

RES,Background

Anonymous, "FAST PATROL BOAT. SHORT M.T.B./M.G.B. CONVERTIBLE 1950-51 PROGRAMME PRELIMINARY EHP OF MODIFIED FORM. MODEL C.J.R.", AEW, Haslar, November 1951, Report No. 41/51.

Model Test of 66 ft. X 18 ft. Boat.

RES,Background

Anonymous, "FAST PATROL BOAT, SHORT MTB/MGB CONVERTIBLE, TYPE B, 1951-52 PROGRAMME PRELIMINARY EHP", Admiralty Experiment Works, Haslar.

RES, Background

Anonymous, "FAST PATROL BOAT (SHORT M.T.B./M.G.B. CONVERTIBLE) TYPE B., 1951-1952 PROGRAMME PRELIMINARY EHP", AEW, Haslar, February 1952, Report No. 6/52.

Model Test -71ft. X 16ft. Boat.

RES, Background

Anonymous, "FAST PATROL BOATS TYPE 'A' DARK CLASS. STERN WEDGES AND FLAPS", Admiralty Experiment Works, Report No. 70/54.

RES,Background

Anonymous, "LONG FAST PATROL BOAT. 1952-53 PROGRAMME MODIFIED FORM PRELIMINARY EHP," AEW, HASLAR, July 1952, Report No. 24/52.

RES, Background

Anonymous, "METHODICAL SERIES - SCALE EFFECT, FAST PATROL BOATS," Admiralty Experiment Works Report No 24/58.

RES, Background

Anonymous, "SEA SLED AND MEDIUM FAST PATROL BOAT-COMPARATIVE BEHAVIOR IN WAVES AND RESISTANCE IN STILL WATER," Report No. 9/56, Admiralty Experiment Works, Haslar, Gosport, Hampshire, England, U.K.

RES, Background

Anonymous, "TESTS OF TRANSOM STERNS ON DESTROYERS," DTMB Report 339, November 1932.

RES, Background

Anonymous, "REPORTS ON HYDRODYNAMIC MODEL TESTS OF HIGH SPEED WHEELED AMPHIBIAN CONCEPTS, PART II," Davidson Lab. Report 726, November 1956.

RES, Background

Anonymous, "MODEL NO. 3324 - ADDITIONAL TEST - LONGITUDINAL STEPS (BASIN DESIGN)," DTMB Report No. 435, June 1937.

RES, Background

Anonymous, "TS SEAPLANE - EXPERIMENTS WITH MODEL OF MK II TWIN FLOATS (EMB MODEL NO. 2494)," DTMB Report No. 88, December 1923.

RES, Background

Anonymous, "THEORETISCHE UND EXPERIMENTELLE UNTERSUCHUNG DER STROMUNG HINTER GLEITFLACHEN UND WASSERTRAGFLUGELN I," Bericht Nr 223/62, Versuchsanstalt Fur Wasserbau Und Schiffbau, Berlin, 1962

RES, Background

Anonymous, "MODELLVERSUCHE FUR EIN 9M - AUTOBOOT," Bericht NR. 322/65, Versuchsanstalt Fur Wasserbau Und Schiffbau, Berlin, 1965.

Model test of 29 foot planing boat.

RES, Background

Anonymous, "MODELLVERSUCHE FUR EINE 30-KN-MOTORYACHT," Bericht NR 314/65, Versuchsanstalt fur Wasserbau und Schiffbau, Berlin, 1965.

Model Tests of a 97.5 Foot V-Bottom Boat.

RES, Background

Bailey, D., "SOME MODEL EXPERIMENTS WITH TRANSOM FLAPS FITTED TO ROUND BOTTOM CRAFT," National Physical Laboratory Ships Division (England) Report 102.

RES, Background

Baker, G.S. and Millar, G.H., "SOME EXPERIMENTS IN CONNECTION WITH THE DESIGN OF FLOATS FOR HYDROAEROPLANES", Advisory Committee for Aeronautics (England) Aeronautical Research Committee, Reports and Memoranda No. 70, November 1912.

RES, Background

Baker, G. S., and Millar, G.H., "EXPERIMENTS WITH MODELS OF HYDROAEROPLANE FLOATS, 2ND AND 3RD SERIES", Advisory Committee for Aeronautics (England), Aeronautical Research Committee Reports and Memoranda No. 98, November 1913.

RES, Background

Baker, G.S., and Millar, G.H., "EXPERIMENTS WITH MODELS OF HYDROAEROPLANE FLOATS, 4TH SERIES", Advisory Committee for Aeronautics, (England), Aeronautical Research Committee Reports and Memoranda No. 99, March 1914.

RES, Background

Baker, G.S.. and Millar, G.H., "EXPERIMENTS WITH MODELS OF HYDROAEROPLANE FLOATS, 5TH SERIES", Advisory Committee for Aeronautics, (England) Aeronautical Research Committee Reports and Memoranda No. 113, July 1914.

RES, Background

Baker, G.S., "EXPERIMENTS WITH MODELS OF SEAPLANE FLOATS, 6TH SERIES", Advisory Committee for Aeronautics (England) Aeronautical Research Committee Reports and Memoranda No. 165, March 1915.

RES, Background

Baker, G.S., "EXPERIMENTS WITH MODELS OF SEAPLANE FLOATS, 7TH SERIES", Advisory Committee for Aeronautics (England) Aeronautical Research Committee Reports and Memoranda No. 166, June 1915.

RES, Background

Baker, G.S. and Bottomley, A.M., "EXPERIMENTS WITH MODELS OF SEAPLANE FLOATS, 8TH SERIES" Advisory Committee For Aeronautics (England), Aeronautical Research Committee Reports and Memoranda, No. 187, November 1915.

RES, Background

Baker, G.S., and Keary, E.M., "EXPERIMENTS WITH MODELS OF SEAPLANE FLOATS, 10TH SERIES". Advisory Committee for Aeronautics (England), Aeronautical Research Committee Reports and Memoranda No. 189, January 1916.

RES, Background

Baker, G.S., and Keary, E.M., "EXPERIMENTS WITH MODELS OF SEAPLANE FLOATS, 11TH SERIES," Advisory Committee for Aeronautics (England), Aeronautical Research Committee Reports and Memoranda No. 365, November 1917.

RES, Background

Baker, G.S. and Keary, E.M., "EXPERIMENTS WITH MODELS OF SEAPLANE FLOATS, 12TH SERIES", Advisory Committee for Aeronautics (England), Aeronautical Research Committee Reports and Memoranda No. 412, April 1918.

RES, Background

Baker, G.S. and Keary, E.M., "EXPERIMENTS WITH MODELS OF SEAPLANE FLOATS, 13TH SERIES", Advisory Committee for Aeronautics (England), Aeronautical Research Committee Reports and Memoranda No. 410, March 1918.

RES, Background

Baker, G.S. and Keary, E.M., "SOME NOTES ON FLOATS FOR SEAPLANES OF THE SINGLE FLOAT TYPE, 14TH SERIES," Advisory Committee For Aeronautics (England) Aeronautical Research Committee Reports and Memoranda No. 437, May 1918.

RES, Background

Baker,G.S.and Keary, E.M., "EXPERIMENTS WITH MODELS OF FLYING BOAT HULLS, 16TH SERIES", Advisory Committee for Aeronautics (England), Aeronautical Research Committee, Reports and Memoranda No. 472, September, 1918.

RES, Background

Baker, G.S. and Keary, E.M., "EXPERIMENTS WITH MODELS OF SEAPLANE FLOATS, 17TH SERIES", Advisory Committee for Aeronautics (England) Aeronautical Research Committee Reports and Memoranda No. 483, December 1918.

RES, Background

Baker, G.S., and Keary, E.M., "EXPERIMENTS WITH MODELS OF FLYING BOAT HULLS AND SEAPLANE FLOATS (POSSIBILITY OF LOADING A FLYING BOAT HULL, THE BEAM AND ANGLE OF FOREBODY BEING VARIED), 19TH SERIES," Advisory Committee for Aeronautics (England), Aeronautical Research Committee Reports and Memoranda No. 555, January 1919.

RES,Background

Baker, G.S. and Keary, E.M., "EXPERIMENTS WITH MODELS OF FLYING BOAT HULLS, 24TH SERIES. COMPARISON OF LONGITUDINAL WITH TRANSVERSE STEPS", Advisory Committee for Areonautics, Areonautical Research Committee Reports and Memoranda No. 893, August 1923.

RES, Background

Baker, G.S., "TEN YEARS TESTING OF MODEL SEAPLANES," Journal of Royal Aeronautical Society, May 1923.

RES, Background

Baker, G.S., et. al. "SEAPLANE FLOATS AND FLYING BOAT HULLS; EXPERIMENTS WITH FULL SIZE MACHINES-1ST SERIES," Advisory Committee for Aeronautics(England), Aeornautical Research Committee Reports and Memoranda No. 473, September 1918.

RES, Background

Baker, G.S. and Keary, E.M., "SEAPLANE FLOATS AND FLYING BOAT HULLS; EXPERIMENTS WITH FULL SIZED MACHINES, 2ND SERIES," Advisory Committee for Aeronautics, Aeronautical Research Committee Reports and Memoranda No. 683, September 1920.

RES, Background

Baker, G.S., "FLYING BOATS", Engineering, March 5, 1920, and Flight, March 4, 11 and 18, 1920.

RES, Background

Beal, A.L. and Hinterthan, W.B., "RESISTANCE AND PROPULSION CHARACTERISTICS FOR LCU 1466 AS REPRESENTED BY MODEL 4545," NSRDC Report 1037, March 1961. DDC AD 254-123.

RES, Background

Benen, L., "SMOOTH-WATER TESTS OF MODEL 4990 REPRESENTING A 36-FOOT RIVER PATROL CRAFT," DTMB Report 1914, October 1964. AD 607-692.

Tests, using TMB Model 4990, were made in Langley Tank No. 1 to determine the performance characteristics of a 36-Foot River Patrol Craft Model 4990 is a revision of Model 4974 which had a deep tunnel forward. This tunnel was instrumental in collecting air under the hull, lowering the effectiveness of the propulsion screws. Model 4990 had the forward tunnel removed and replaced by a convex section terminating in a blunt bow. The tests indicate that no air was entrained under the bow of the modified model, but that EHP at the design operating conditions was increased. Spray over the bow and side of the model was eliminated by use of spray strips. Test results for two displacements with and without spray strips are presented.

RES, Background

Benen, L., "SMOOTH WATER TESTS OF FOIL-MARAN MODEL 4836-2 REPRESENTING A 43-FOOT PATROL CRAFT," NSRDC Report No. 1852, August 1964. Distributed only upon authorization of the Bureau of Ships.

RES, Background

Benen, L., GENERAL RESISTANCE TEST OF A STEPLESS PLANING HULL WITH APPLICATION TO A HYDROFOIL CONFIGURATION", DTMB 2006. July 1965, AD 619 646.

RES, Background

Benen, L., "RESISTANCE AND EHP OF A "FOIL-MARAN" CONFIGURATION AS PREDICTED FROM SMOOTH WATER TESTS OF MODEL 4836-3," NSRDC Report 2118, December 1965. AD 628-555.

RES, Background

Benen, L., "GENERAL RESISTANCE TEST OF A SHALLOW STEP PLANING HULL WITH APPLICATION TO A HYDROFOIL CONFIGURATION", NSRDC Report No. 2169, May 1966, AD 634-560.

RES, Background

Benen. L., "GENERAL RESISTANCE TEST OF A STEPPED PLANING HULL WITH APPLICATION TO A HYDROFOIL CONFIGURATION", (Model No. 4776) NSRDC 2320, May 1967, AD 654-900.

RES, Background

Blanchard, U., "THE PLANING CHARACTERISTICS OF A SURFACE HAVING A BASIC ANGLE OF DEAD RISE OF 40° AND HORIZONTAL CHINE FLARE " NACA TN 2842, December 1952.

The principal planing characteristics of a surface having an angle of dead rise of 40° and horizontal chine flare are presented. The data indicate that at a given trim the important planing characteristics depend mainly on lift coefficient. The effects of increasing the basic angle of dead rise from 20° (NACA TN 2804) to 40° are to decrease the ratio of the center-of-pressure location to the mean wetted length, to decrease the extent of pile-up of water at the keel, and to increase the friction drag.

RES, Background

Blount, D.L., "RESISTANCE CHARACTERISTICS FOR LCM-A AS REPRESENTED BY MODEL 4746", David Taylor Model Basin Report 1334, August 1959.

Resistance characteristics of the LCM-A vehicle were determined by tests conducted at the David Taylor Model Basin with Model 4746. This report describes the special procedures employed and gives the results of the tests.

RES, Background

Boericke, H., and Troiani, F., "RESISTANCES OF SOME HIGH SPEED CATAMARAN FORMS", Report No. 25, Advanced Studies Section, Bureau of Ships, Dec. 1, 1960.

Model tests conducted at the Naval Academy towing tank with 2 ft. models.

RES, Background

Brown, P.W. and Van Dyke, R.L., "AN EXPERIMENTAL INVESTIGATION OF DEADRISE PLANING SURFACES WITH RE-ENTRANT VEE-STEPS. Davidson Laboratory Letter Report No. 664, December 1964.

RES, Background

Brown, P.W., "AN ANALYSIS OF THE FORCES AND MOMENTS ON RE-ENTRANT VEE-STEP PLANING SURFACES", Hoboken, May, 66 Davidson Lab. No 1142, AD 486-674.

RES, Background

Brown, P.W., "AN EMPIRICAL ANALYSIS OF THE PLANING CHARACTERISTICS OF RECTANGULAR FLAT PLATES AND WEDGES", Short Brothers and Harland Ltd., Hydro Note No. 47, September 1954.

RES, Background

Carter, A.W., et. al., "AN INVESTIGATION OF EFFECTS OF REVERSED-TYPE LONGITUDINAL STEPS ON RESISTANCE AND SPRAY CHARACTERISTICS OF A FLYING-BOAT HULL", NACA TN 1356, July 1947.

RES, Background

Carter, A.W. and Weinstein, I., "EFFECT OF FOREBODY WARP ON THE HYDRODYNAMIC QUALITIES OF A HYPOTHETICAL FLYING BOAT HAVING A HULL LENGTH-BEAM RATIO OF 15", Tech. Note No. 1828 NACA.

RES, Background

Cavanaugh, M.G., "EFFECT OF TRANSOM WEDGES ON TRIM AND POWERING FOR 83 AND 95 FOOT COAST GUARD PATROL BOATS REPRESENTED BY MODEL 4429", DTMB Report No. 1471, September 1960. Requires Coast Guard approval fc· distribution.

RES, Background

Chambliss, D.B. and Boyd, G.M., "THE PLANING CHARACTERISTICS OF TWO V-SHAPED PRISMATIC SURFACES HAVING ANGLES OF DEAD RISE OF 20° AND 40°. NACA TN 2876, January 1953.

An investigation was conducted to determine the principal characteristics of two V-shaped surfaces having angles of dead rise of 20° and 40°. The data indicate that, for a given condition of load, speed, and trim, the wetted length, distance of center of pressure from trailing edge, and drag increase with an increase in the angle of dead rise.

RES, Background

Cheng, H.M., "PERFORMANCE COMPARISONS OF MARINE VEHICLES", September 12, 1958, New York Metropolitan Section SNAME.

RES, Background

Christopher, K.W., "INVESTIGATION OF THE PLANING LIFT OF A FLAT PLATE AT SPEEDS UP TO 170 FEET PER SECOND," NACA TN 3951, March 1957.

An experimental investigation was made in the Langley high-speed hydrodynamics facility to determine whether the planing lift coefficient of a flat-bottom planing surface remains constant with increasing speed at the high towing speeds of this facility. No effect of speed was noted for the range of speeds tested. In addition, the data agreed well with that recently obtained in lower speed towing tanks. A brief description of the facility is included.

RES, Background

Christopher, K.W., "EFFECT OF SHALLOW WATER IN THE HYDRODYNAMIC CHARACTERISTICS OF A FLAT-BOTTOM PLANING SURFACE," NACA TN 3642, April 1956.
The effects on the planing characteristics of the clearance between a flat-bottom planing surface and the tank bottom are presented. The range of trims investigated was from 4° to 20° for wetted-length-beam ratios of 0.4 to 6.4. Each condition was investigated over a range of clearance of from 0.2 to 1.6 beams. All the measured values increased with decreasing clearance. A description of the monorail and its associated apparatus is included.
RES.Background

Clement, E.P., "EXPERIMENTAL BOAT-HULL FORM TEST PROGRAM, BASIC FORM, MODEL 4300, RESISTANCE CHARACTERISTICS", NSRDC Report No. 740, November 1950. Distribution only upon authorization of Bureau of Ships Codes 452, 422.
RES,Background

Clement, E.P., "MODEL TEST RESULTS AND PREDICTED EHP FOR SCHEME I, EXPERIMENTAL BOAT-HULL FORM TEST PROGRAM, FROM TESTS OF MODEL 4309," NSRDC Report No 764, April 1951. Distributed only upon authorization of BuSHIPS, Codel 452,422.
RES, Background

Clement, E.P., "MODEL TEST RESULTS AND PREDICTED EHP FOR HACKER FORM, EXPERIMENTAL BOAT-HULL FORM TEST PROGRAM, FROM TESTS OF MODEL 43115," NSRDC Report No. 776, June 1951. Distributed only upon authoridation of Bureau of Ships.
RES,Background

Clement, E.P., "MODEL TEST RESULTS AND PREDICTED EHP FOR THE HURON-EDDY COMPANY 85 FOOT AND 94 FOOT AIRCRAFT RESCUE BOAT DESIGNS," NSRDC Report No. 798, October 1951. Distributed only upon authorization of the Bureau of Ships.
RES, Background

Clement, E.P., "MODEL TEST RESULTS AND PREDICTED EHP FOR THE HURON-EDDY COMPANY REVISED 94 FOOT CRASH-RESCUE BOAT DESIGN," NSRDC Report No. 820, March 1952. Distribution only upon authorization of Bureau of Ships.
RES, Background

Clement, E.P., "HULL FORM OF STEPLESS PLANING BOATS", SNAME Chesapeake Section 12 Jan. 1955.
RES, Background

Clement, E.P., and Pournaras, V.A., "EFFECTS ON THE PERFORMANCE OF THE U.S. NAVY LCVP OF ADDING RETRACTABLE BOW AND STERN EXTENSIONS", NSRDC Report No. 1085, Sept. 1956, AD-145-071 or AD-458-047L.

RES, Background

Clement, E.P. and Kimon, P.M., " COMPARATIVE RESISTANCE DATA FOR FOUR PLANING BOAT DESIGNS", DTMB Report 1113, January, 1957, AD-145-074L.

Four existing models of planing craft were retested at "standard conditions" for planing boat models. The test results for each model are presented in a design data sheet. The data are compared to show the effects of differences in hull form. These comparisons are independent of differences in hull loading, in LCG location, or in size of boat. Auxiliary graphs are included to assist in making estimates of speed and power for new designs.

RES, Background

Clement, E.P. and Tate, C.W., "MODEL TEST RESULTS AND PREDICTED EHP FOR AN 86 FT. PERSONNEL BOAT, FROM TESTS OF MODEL 4675," DTMB Report 1288, December 1958, AD 610-137.

Smooth-water model tests were made of an 86 ft. personnel boat designed for "all-weather" operation. The model was tested for ehp at full-scale displacements of 130,000 lb., 140,000 lb., and 150,000 lb. In addition, at one speed and displacement, the lines of flow were determined by the acid-trace method, in order to find the appropiate location for the bilge keels.

RES, Background

Clement, E.P., "DEVELOPMENT AND MODEL TESTS OF AN EFFICIENT PLANING HULL DESIGN", DTMB, Report 1314, April 1959, AD 430-230.

A hull form for a stepless planing boat was designed, based upon an analysis of the results of resistance tests of a number of previous designs, and also taking into consideration the features desirable for good steering qualities and good rough-water performance. A model was built and tested, and the results were compared with the resistance data from designs which had been previously tested at the Model Basin. This comparison showed that the new design has appreciably less resistance than the earlier designs at all except very low speeds. The new design was also tested at a wide range of hull loading and LCG locations, and these results are presented.

RES, Background

Clement, E., "CALCULATED PERFORMANCE OF PLANING CATAMARANS", Society of Small Craft Designers, The Planimeter, June, 1962.

RES,Background

Clement, E.P., "A LIFTING SURFACE APPROACH TO PLANING BOAT DESIGN," DTMB report 1902, September 1964, AD 606-835.

The utilization of a design approach for a planing boat similar to that followed in the design of a hydrofoil boat or an airplane leads to a new, more efficient type of planing boat configuration. The lift-drag ratio of the new configuration is approximately 50 percent greater than that of the conventional stepless planing boat.

RES,Background

Clement, E.P., "RESISTANCE TESTS OF A MODEL OF THE GERMAN E-BOAT," NSRDC Report No. 1703, January 1963, AD 298-131.

RES,Background

Clement,E.P., "THE DEVELOPMENT OF EFFICIENT HULL FORMS FOR HYDROFOIL BOATS", NSRDC Report No. 2160, March 1966, AD 481-307.

RES,Background

Clement, E.P., "PERFORMANCE LIMITS OF THE STEPLESS PLANING BOAT AND THE POTENTIALITIES OF THE STEPPED BOAT," Symposium on Smallcraft Hydrodynamic, 1966 Southeast Section, SNAME.

RES,Background

Clement, E.P., "THE PLANING CHARACTERISTICS OF A 15-DEGREE DEADRISE SURFACE WITH CIRCULAR-ARC CAMBER," DTMB Report 2298, September 1966. AD 813-032.

A planing surface with 15-deg deadrise, circular-arc camber, and a moderate amount of trailing edge sweep was designed as the main lifting surface for an existing experimental stepped planing boat. A model of the planing surface was then built and tested in the towing basin. The tests results indicate that the lift/drag ratio of the main planing surface of the boat will be increased 10 percent by utilization of this design. Also, the performance in head seas should be significantly improved since the cambered surface will develop the necessary lift at approximately one-half the forebody angle of attack at which the boat now operates.

RES,Background

Clement, E.P., "MODEL TESTS OF A STEPPED PLANING BOAT WITH AN ADJUSTABLE STERN STABILIZER" NSRDC Report 2414, May 1967. AD 661-792.

The Naval Ship Research and Development Center is developing a stepped hull having an adjustable planing stabilizer at the stern for balance, stability, and control of trim. At high speed, this craft planes on a small area forward of the step (which is located approximately at midlength), with the stern supported by the adjustable stabilizer. Since the afterbody wetted area is eliminated at high speed, the frictional resistance, and accordingly the total drag also are considerably lower than for the conventional planing boat. Furthermore, at high speed the trim angle of the main forebody planing surface can be adjusted to the value for minimum drag by adjusting the vertical position of the stabilizer. This report gives the results of tests of several variations of the first model of this type of craft which was designed and extensively tested at the Center. The effects on performance are shown of changes in the following: spray strip configuration, LCG location, weight, step depth, and afterbody shape. RES, Background

Clement, E.P., "EFFECT OF LENGTH-BEAM RATIO ON THE PERFORMANCE OF A STEPPED PLANING BOAT WITH AN ADJUSTABLE STERN STABILIZER", NSRDC Report 2552, August 1967, AD825 -515.

Two models of stepped planing boats were tested to determine the effect of change in length-beam ratio. The models were tested with the same adjustable stern stabilizer at several loads and LCG locations. The model with the lower length beam ratio (L_P/B_{PX} = 3.4) had considerably more resistance than the other stepped model (L_P/B_{PX} = 4.7) at low speed and slightly less resistance at high speed. The resistance of both stepped designs at high speed was considerably less than that of a representative unstepped planing boat design.

RES, Background

Coombes, L.P., "SCALE EFFECT IN TANK TESTS OF SEAPLANE MODELS," Proc. Fifth Int. Cong. Appl. Mech., 1939, pp. 513-519.

RES, Background

Corlett, E.C.B., "TRENDS IN VERY HIGH-SPEED CRAFT, PART 1," The Motor Boat and Yachting September and October 1954.

RES, Background

Crowley, J.W. & Ronan, K.M., "CHARACTERISTICS OF THE BOAT-TYPE SEAPLANE DURING TAKEOFF", NACA Report 226, 1925.

RES, Background

Mechanics, Vol 4, 1958.

RES, Background

Cumming, R., "RESISTANCE AND EHP OF A PLANING CATAMARAN AS PREDICTED FROM TESTS OF MODEL 4836," DTMB Report 1478, November 1960. AD 248-148.

Model tests were made to determine the powering characteristics for a catamaran-type hull. Wetted lengths, running trims, and resistances were measured on the model for a number of speeds, displacements, and initial trims. In addition, the effect on performance of changes in hull spacing, planing area, and spray rails was determined. A test was also made with a step on the roof of the tunnel. The results are presented in dimensionless form and also in the form of ehp curves for 70 ft, 105,400-lb. boat.

The data obtained from the tests indicated that for this hull a wide spacing is of no advantage from a resistance point of view. The spray rails on the final configuration increased the drag sightly on the full-sized boat. The best configuration was not as good as a good conventional planing hull, and this is thought to be primarily due to a large amount of air drag.

RES, Background

Curry, J.H., "EXPERIMENTAL BOAT-HULL FORM TEST PROGRAM, SCHEME J., MODEL 4310, RESISTANCE CHARACTERISTICS", NSRDC Report No. 738, October 1950. Distributed only upon authorization of BUSHIPS, Codes 452, 422.

RES, Background

Curry, J.H., "MODEL TEST RESULTS AND PREDICTED EHP FOR SCHEME "L" EXPERIMENTAL BOAT-HULL FORM TEST PROGRAM, FROM TESTS OF MODEL 4312," NSRDC Report No. 757, March 1951. Distributed only upon authorization of Bureau of Ships, Codes 452,422.

RES, Background

Curry, J.H., "MODEL TEST RESULTS AND PREDICTED EHP FOR BUREAU OF SHIPS DESIGN 52 FOOT AIRCRAFT RESCUE BOAT FROM TESTS OF MODEL 4377," NSRDC Report No. 769, June 1951. Distributed only upon authorization of BuSHIPS.

RES, Background

Curry, J.H., "MODEL TEST RESULTS AND PREDICTED EHP FOR BUREAU OF SHIPS DESIGN 90 FT. AIRCRAFT RESCUE BOAT FROM TEST OF MODEL 4375", NSRDC Report No. 782, July 1951. Distributed only upon authorization of Bureau of Ships.

RES, Background

Curry, J.H., "STUDIES TO DEVELOP A HIGH SPEED LANDING CRAFT HAVING THE SAME PROPORTIONS AS THE WORLD WAR II LCVP," NSRDC Report No. C-498, May 1962.

Model test results for heavily loaded inverted-vee hull forms at moderate speeds.

RES, Background

Davidson, K. and Suarez, A., "TESTS OF 20 RELATED MODELS OF VEE-BOTTOM MOTOR BOATS, E.M.B. SERIES 50," DTMB Report R-47, March 1949, AD 224-761.

"Unfortunately the parent form for this series has a chine that is considered too low forward, by modern standards. There are indications that the observed resistances are too low, because of laminar flow on many of the models. The data are plotted as contours of Rt/W, as contours of running trim angle in deg. of model wetted surface, and of other factors." - Saunders.

RES, Background

Dawson, J., "RESISTANCE OF SINGLE-SCREW COASTERS, PART I," IESS 1952-1953.

RES, Background

Dawson, J., "RESISTANCE OF SINGLE-SCREW COASTERS, PART II," IESS, 1954-1955.

RES, Background

Dawson, J., "RESISTANCE OF SINGLE-SCREW COASTERS, PART III," IESS, 1955-1956.

RES, Background

Dawson, J., "RESISTANCE OF SINGLE-SCREW COASTERS, PART IV," IESS, 1959-1960.

RES, Background

Dawson, J.R., "TANK TESTS OF THREE MODELS OF FLYING BOAT HULLS OF THE POINTED-STEP TYPE WITH DIFFERENT ANGLES OF DEAD RISE - NACA MODEL 35 SERIES," NACA TN No. 551, Jan. 1936.

RES, Background

Dawson, J.R. and Wadlin, K.L., "PRELIMINARY TANK TESTS WITH PLANING-TAIL SEAPLANE HULLS," NACA ARR 3F15, 1943.

RES, Background

Dawson, J.R., and Walter, R.C., "TANK TESTS TO DETERMINE THE EFFECT OF VARYING DESIGN PARAMETERS OF PLANING TAIL HULLS," NACA TN 1062, May 1946.

RES, Background

Dawson, J.R., et al., "TANK TESTS TO DETERMINE THE EFFECT OF VARYING DESIGN PARAMETERS OF PLANING - TAIL HULLS. II-EFFECT OF VARYING DEPTH OF STEP, ANGLE OF AFTERBODY KEEL, LENGTH OF AFTERBODY CHINE, AND GROSS LOAD," NACA TN 1101, 1946.

RES, Background

Dawson, J.R. and Wadlin, K.L., "PRELIMINARY TANK TEST OF NACA HYDRO-SKIS FOR HIGH-SPEED AIRPLANES," NACA RM No. L7104, November 1947.

Contains results from tank landing and take-off tests with a dynamic model of a hypothetical jet-propelled airplane equipped with NACA hydro-skis. These results show stable take-offs and landings for the model, although the resistance is high. The high resistance, which is not considered necessarily inherent, appears to be acceptable for airplanes equipped with rocket motors. It is concluded that hydro-skis suitable for flush retraction into streamline fuselages offer a practicable means for taking off and landing high-speed airplanes on the water.

RES, Background

DeSaix, P., "PREDICTED E.H.P. AND TRIM CHARACTERISTICS FOR HIGH SPEED LCM-8 SCHEME B", DL Report No. 680, January 1958.

RES, Background

Desaix, P., "PREDICTED EHP AND TRIM CHARACTERISTICS FOR 54 FOOT BOMB TARGET BOAT-SCHEME B", ETT Report No 692, April 1958.

RES, Background

DeSaix, P., "PREDICTED EHP AND TRIM CHARACTERISTICS FOR 45' STEEL UTILITY BOAT", DL Report No. 709, September 1958.

RES, Background

DeSaix, P., "MODEL TESTS OF A 26-FOOT PERSONNEL BOAT IN SMOOTH WATER AND WAVES," Davidson Laboratory Report No. 763, October 1959.

RES, Background

Dickerson, M.C., "RESISTANCE CHARACTERISTICS OBTAINED WITH VERTICAL AXIS PROPELLERS FOR LCU(A), REPRESENTED BY MODEL 4952," NSRDC Report 1753, February 1964, AD 434-703.

RES, Background

Diehl, W.S., "TESTS ON AERONAUTICAL FUSELAGES AND HULLS," NACA Report 236, 1926

"This paper gives drag and moment data on a great variety of airplane fuselages, seaplane and flying-boat hulls, airship cabins, nacelles, and the like." - Saunders.

RES, Background

Diehl, W.S., "THE ESTABLISHMENT OF MAXIMUM LOAD CAPACITY OF SEAPLANES AND FLYING BOATS", NACA Report 453, September 1932.

RES, Background

Diehl, W.S., "A DISCUSSION OF CERTAIN PROBLEMS CONNECTED WITH THE DESIGN OF HULLS OF FLYING BOATS AND THE USE OF GENERAL TEST DATA", NACA Report 625, November, 1937; 1938 reports, Pgs. 253-260, Page 260 lists 24 references.

RES, Background

Diehl, W.S., "THE APPLICATION OF BASIC DATA ON PLANING SURFACES TO THE DESIGN OF FLYING BOAT HULLS", NACA Report No. 694, 16 December 1939, 1940 reports, pp 287-293.

RES, Background

Doust, D.J. and O'Brien, T.P., "RESISTANCE AND PROPULSION OF TRAWLERS," NECI, 1958-59.

RES, Background

Doust, D.J., "OPTIMIZED TRAWLER FORMS," NECI 1962-63, Chapter 2.

RES, Background

Doust, D.J., "SHIP DESIGN AND POWER ESTIMATING USING STATISTICAL METHODS", December, 1962, Publication No. 70. Norwegian Ship Model Experiment Tank, The Technical University of Norway.

RES, Background

Doust, D.J., et.al., "A STATISTICAL ANALYSIS OF FAO RESISTANCE DATA FOR FISHING CRAFT," Third FAO Technical Meeting on Fishing Boats, Goteborg, October 1965. Ship Report 93, February 1967, National Physical Laboratory.

RES, Background

Drisko, J.B., "RESISTANCE OF V-BOTTOM HULLS AT SPEED-LENGTH RATIOS UP TO 5," Davidson Lab. Report 264, December 1944.

RES, Background

DuCane, P., "A CONSIDERATION OF SOME OF THE PRINCIPLES UNDERLYING THE PERFORMANCE OF PLANING CRAFT IN THEORY AND PRACTICE", Swedish Institute MENA, 1954.

RES, Background

Edstrand, H. and Bratt, H., "THE TRANSVERSE STABILITY AND RESISTANCE OF SINGLE-STEP BOATS WHEN PLANING," Publication No 25. of the Swedish State Shipbuilding Experimental Tank, 1953.

RES, Background

Eleftheriades, P.K., "MODEL TEST RESULTS AND PREDICTED EHP FOR THE WORLD WAR II AND THE MK 2 LCP (L)'S FROM TESTS OF MODELS 4388-1, 4553 AND 4555," DTMB Report 968, June 1955.

RES, Background

Eleftheriades, P.K., "MODEL TEST RESULTS AND PREDICTED EHP FOR TWO DESIGNS FOR THE MK2 40 - FT. AVR FROM TESTS OF MODEL 4520 AND 4543," NSRDC Report No. 971, August 1955. Distributed only upon authorization from the Bureau of Ships. AD 416-163.

RES, Background

Everest, J.T., "SOME RESEARCH ON THE HYDRODYNAMICS OF CATAMARANS AND MULTI-HULLED VESSELS IN CALM WATER", NECI, March 18, 1968.

RES, Background

Falkemo, C. and Adlercreutz, J., "MODEL TESTS ON SINGLE-STEP PLANING SURFACES," STHLM, 19 3, Transactions of the Royal Institute of Technology, Stockholm, Sweden, No.24 (publication No. 1/1947 of the Ship Testing Laboratory).

RES, Background

Fridsma, G., "COMPARATIVE TESTS ON MODEL 2387 WITH AND WITHOUT BOTTOM CAMBER IN SMOOTH AND ROUGH WATER", Davidson Laboratory LR-1153, June 1966, for DTMB, AD 639-093.
Performance characteristics in smooth and rough water are presented for a 52 ft., 55,000 lb. displacement, hard chine patrol boat, with and without bottom camber; based on tests conducted on a 1/16 scale model.

RES, Background

Fried, W., "THE NUMBER 3 TANK FOE MODEL SEAPLANE TESTS," SIT, ETT, Report 289, October 1945.

RES, Background

Gilmer, T.C., "MODEL TESTS OF SOME FISHING LAUNCHES," Fishing Boats of the World, Vol. II.

RES, Background

Goodwin, "SEAPLANES TAKING OFF AND ALIGHTING," Advisory Committee for Aeronautics, Aeronautical Research Committee Reports and Memoranda No. 784, December 1921.

RES, Background

Grafton, F.R., "RESISTANCE TESTS OF A PLANING LCVP (MODEL 5074)", January 1967, NSRDC T&E Report No. HML P-199-H-01.

RES, Background

Grigg, A.D., "EXPERIMENTS WITH MODELS OF SEAPLANE FLOATS, 9th SERIES", Advisory Committee for Aeronautics (England), Aeronautical Research Committee Reports and Memoranda No.188, December 1915.

RES, Background

Guidoni, A., "SEAPLANES, FIFTEEN YEARS OF NAVAL AVIATION," Journal of the Royal Aeronautical Society, January 1928.

RES, Background

Hankley, D.W., and West, E.E., "EFFECTIVE HORSEPOWER PREDICTIONS FOR A LANDING CRAFT (LCVP) FITTED WITH SPRAY RAILS AND FLAPS DERIVED FROM TESTS WITH MODELS 4031 AND 4031-2", DTMB Report 1865, January, 1965, AD 610-806.

Tests of a bare-hull model of a landing craft (LCVP) were conducted at the heavy and light conditions over a speed range from 0 to 36 knots. The results indicated that the resistance requirement at the heavy displacement was higher at 21 knots than at 28 knots. Attempts were then made to lower this "hump" in the resistance by equipping the model with stern flaps and spray rails. These minor hull changes definitely lowered the effective horsepower required at the 20 knot speed, but the 5-deg flaps were detrimental at speeds above 23 knots. Accordingly, it is recommended that stern flaps be adjustable in order to vary the angle to an optimum for a specified speed.

RES,Background

Hansen, H.B., "SYSTEMATIC EXPERIMENTS WITH MODELS OF FAST COASTERS," Norwegian Ship Model Experiment Tank Publications No. 44, December 1966.

RES, Background

Harbaugh, K., "SMOOTH-WATER TESTS OF MODEL 4943 REPRESENTING A 41-FOOT PERSONNEL BOAT," DTMB Report 1735, April 1963, AD 403-660.

Tests, using TMB Model 4943, were conducted in Langley Tank No.1 to determine the performance characteristics of a round bilge 41-foot Personnel Boat. Model resistance, trim, wetted length, and CG rise were measured throughout the speed range for a number of hull loadings, initial trim conditions, and appendage configurations. Comparisons are made with the design condition. Results are presented in dimensionless form. RES,Background

Harbaugh, K.H., "PERFORMANCE CHARACTERISTICS OF A MODEL 4958 REPRESENTING A PLANING TYPE 63-FOOT AIRCRAFT RESCUE BOAT," DTMB 1775, SEPTEMBER 1963.

Tests using TMB Model 4958 were made in Langley Tank No.1 to determine the performance characteristics of a V-bottom 63-foot Aircraft Rescue Boat. Model speed, resistance, trim, and wetted length were measured throughout the speed range for a number of hull loadings, initial trim conditions, and with all appendages. Tests with and without appendages were conducted for the DTMB standard condition for planing boats and test data for that condition are presented in nondimensional form. Change in trim and ehp are presented in terms of full-scale speed in knots.

RES,Background

Hatch, G.N., "PERFORMANCE AND HULL FORM OF FAST PLANING CRAFT," Articles 1,2,3,4,&5, Ship and Boat Builder, Feb. March, April, May and June 1963.

RES,Background

Helm, G.M., "SYSTEMATIC (MODEL) INVESTIGATIONS ON THE RESISTANCE OF BOATS AND SMALL SHIPS," (in German) Hansa,101, No.22, November 1964, P.2179. also Hsva Report No. 1300.

RES, Background

Helm, K. "SYSTEMATIC (MODEL) INVESTIGATIONS ON THE INFLUENCE OF (HULL) FORM UPON RESISTANCE AND POWER REQUIREMENTS, IN INLAND-WATERWAYS PASSENGER SHIPS," (in German) Schiff u Hagen, 15 February, 1963, P 98.

RES, Background

Henschke, W., "SYSTEMATIC RESISTANCE EXPERIMENTS WITH MODELS OF MOTOR FISHING VESSELS," Schiffstechnik, BD. 4,1957.

RES, Background

Hickman, A., "SEA SLED TECHNICAL ADVENTURE," Rudder, February 1946.

RES, Background

Hobbs, R., "FASTER BOATS", The Planimeter, July 1965, SSCD.

RES, Background

Hope, L., "NOTES ON FLYING BOAT HULLS," Flight May 27, 1920 and June 3, 1920; Aeronautical Journal, August 1920.

RES, Background

Hughes, G., "FRICTIONAL RESISTANCE OF SMOOTH PLANE SURFACES IN TURBULENT FLOW", INA, 1952.

RES, Background

Hughes, G., "FRICTION AND FORM RESISTANCE IN TURBULENT FLOW AND A PROPOSED FORMULATION FOR USE IN MODEL AND SHIP CORRELATION," INA, 1954.

RES, Background

Hunsaker, "NAVAL ARCHITECTURE IN AERONAUTICS," Aeronautical Journal, July 1920.

RES, Background

Hunt, R.P. and Lasky, M.P., "PREDICTIONS OF POWERING AND TRIM ANGLE OF AN LCM (8) ALUMINUM HULL, REPRESENTED BY MODEL 5152", NSRDC T&E Report No. 265-H-01, February 1968.

"Each Transmittal of this document outside the Department of Defense must have prior approval of the Head, Hydromechanics Laboratory, Naval Ship Research and Development Center."

RES, Background

Johnson, V., Jr., and Rasnick, T.A., "THE DRAG COEFFICIENT OF PARABOLIC BODIES OF REVOLUTION OPERATING AT ZERO CAVITATION NUMBER AND ZERO ANGLE OF YAW", NASA Technical Report R-86.

The form-drag coefficient of parabolic bodies of revolution with fineness ratios greater than 1 operating at zero angle of yaw and zero cavitation number is determined both theoretically and experimentally. Agreement between theory and experiment is very good. The theoretical form-drag coefficient of paraboloids is about half the form-drag coefficient of cones of comparable fineness ratio.

RES, Background

Kafali, K., "THE POWERING OF PLANING HULLS," ISP, Vol 7, No. 71, July 1960.

RES,Background

Kapryan, W.J. and Weinstein, I., "THE PLANING CHARACTERISTICS OF A SURFACE HAVING A BASIC ANGLE OF DEAD RISE OF 20° AND HORIZONTAL CHINE FLARE," NACA TN 2804, October 1952.

A high-speed investigation was conducted to determine the hydrodynamic characteristics of a planing surface having an angle of dead rise of 20° and horizontal chine flare. The data indicated that the planing characteristics at a given trim depend only on lift coefficient. The ratio of center-of-pressure location to the mean wetted length can be considered approximately equal to 0.67 up to 18° of trim. This ratio decreases with futher increase in trim. Pile-up of water at the keel of the model was substantial at trims above 12°. Friction drag is negligible at high trims. The resistance for trims of 18° and higher, therefore, may be assumed equal to the load times the tangent of the trim angle.

RES, Background

Kapryan, W.J., and Boyd, G.M. Jr., "THE EFFECT OF VERTICAL CHINE STRIPS ON THE PLANING CHARACTERISTICS OF V-SHAPED PRISMATIC SURFACES HAVING ANGLES OF DEAD RISE OF 20° AND 40°. NACA TN 3052, November 1953.

The effect of vertical chine strips on the planing characteristics of two prismatic surfaces having angles of dead rise of 20° and 40° has been determined as part of a general research investigation on planing surfaces. Wetted lengths, resistance, and center-of-pressure locations were determined at speed coefficients up to 25.0, load coefficients up to approximately 80.0, and trims up to 30°. In addition, comparisons of the more important planing characteristics are made with those for related surfaces having angles of dead rise of 0°, 20°, and 40°, and for surfaces having angles of dead rise of 20° and 40° with horizontal chine flare. These comparisons show that vertical chine strips are more effective means of increasing the lift of a given surface than horizontal chine flare is. This increase in lift, however, is accompanied by a substantial increase in drag so that the lifting efficiency of the vertically flared surface is comparable to one having horizontal chine flare.

RES,Background

Kent, J. and Cutland, R.S., "RESISTANCE EXPERIMENTS IN SMOOTH AND ROUGH WATER MADE WITH MODELS OF HIGH SPEED SHIPS," INA, Vol. 77, 1935.

RES, Background

Kikuhara, S., "PHOTOS OF SPRAY GENERATED BY SEAPLANE HULLS", NAVAER Report No. DR 1952, November 1958. Navy Department, Bureau of Aeronautics, Washington, D.C.

RES, Background

Kimon, P.M., "MODEL EHP TESTS OF TWO DESIGNS OF A 36 FT HYDROJET LCVP," DTMB Report 1046, August 1956, AD 124-291L. Distrubuted only on authorization of BUSHIPS.

RES, Background

Kimon. P.M., "THE PLANING CHARACTERISTICS OF AN INVERTED V PRISMATIC SURFACE WITH MINUS 10 DEGREE DEAD RISE," DTMB Report 1076, March 1957. AD 224-721.

This report is one of a series on the experimental investigation of the planing characteristics of a series of related prismatic surfaces.

The principal planing characteristics have been obtained for an inverted V prismatic surface having an angle of dead rise of -10 deg. Wetted lengths, resistance, and center-of-pressure location were determined at speed coefficients ranging up to 19.5, beam-loading coefficients from 0.87 to 71.5, and trims up to 30 deg. Keel-wetted length-beam ratios were extended to approximately 8.0 in all cases where excessive loads or excessive spray conditions were not encountered.

The data indicated that the important planing characteristics are independent of speed and load for a given trim and are dependent primarly upon lift coefficient. The difference between keel wetted length and chine wetted length is constant for a given trim angle. The ratio of the center-of-pressure location forward of the trailing edge to the mean wetted length is dependent on trim angle and on wetted length. The drag data indicate that the friction-drag component is a large percentage of the total drag at the low trims but decreases rapidly with increase in trim. At the high trim angles of 24 and 30 deg, the induced drag exceeds the total drag and indicates an apparent negative friction force.

RES, Background

Koelbel, J., "POWERING OF PLANING BOATS," The Planimeter, March, April, May, 1954, also in "HOW TO DESIGN PLANING HULLS," Vol. 49, Motor Boating Ideal Series under title "BETTER PERFORMANCE FOR STEPLESS PLANING HULLS".

RES, Background

Koelbel, J.G. Jr., "THE HYDRODYNAMICS OF STEPLESS PLANING HULLS", SSCD, The Planimeter October, November and December, 1958.

RES, Background

Koning, J.G., "EHP OF SMALL SEAGOING CARGO SHIPS", Pub. 37, NSMB, 1938.

RES, Background

Korvin-Kroukovsky, B.V. and Chabrow, F.R., "THE DISCONTINUOUS FLUID FLOW PAST AN IMMERSED WEDGE", October, 1948, S.I.T., E.T.T. Report 334.

RES, Background

Korvin-Kroukovsky, B.V., et. al., "WAVE CONTOURS IN THE WAKE OF A 20° DEADRISE PLANING SURFACE," Stevens Institute of Technology, Experimental Towing Tank Report 337, June 1948.

RES, Background

Korvin-Kroukovsky, B.V., et. al. "WAVE CONTOURS IN THE WAKE OF A 10° PLANING SURFACE," S.I.T., E.T.T. Report 344, November 1948.

RES, Background

Korvin-Kroukovsky, B.V., "WAVE PROFILE OF VEE-PLANING SURFACE, INCLUDING TEST DATA ON A 30° DEADRISE SURFACE," Stevens Institute of Technology, Experimental Towing Tank Report 339, April 1949.

RES, Background

Korvin-Kroukovsky, B.V., et. al , "WETTED AREA AND CENTER OF PRESSURE OF PLANING SURFACES," August 1949, S.I.T., E.T.T. Report 360.

Tests of prismatic Vee planing surfaces were made at the Experimental Towing Tank, Stevens Institute of Technology, in order to determine the wetted length under various conditions of trim, deadrise, speed, and loading. The data obtained were used to supplement the previously available test data of Sottorf, Sambraus, and Shoemaker in deriving empirical formulae which express the functional relation between these five variables. All the data needed for a quick and easy estimation of the wetted area and of the location of the center of pressure of Vee planing surfaces are presented on two summary charts.

This report carries a bibliography of related references.

RES, Background

Korvin-Kroukovsky, B.V., "LIFT OF PLANING SURFACES," Readers Forum Section, Journal of Aeronautical Sciences, September 1950.

RES,Background

Korvin-Kroukovsky, B.V., "TURBULENCE STIMULATION IN THE BOUNDARY LAYER OF PLANING SURFACES: PART I, REVIEW OF ANALYTICAL AND EXPERIMENTAL ASPECTS OF THE SUBJECT," S.I.T., E.T.T. Report 443, August 1952.

RES,Background

Lackenby, J. & Parker, M.N.," THE BSRA METHODICAL SERIES, AN OVERALL PRESENTATION, VARIATION OF RESISTANCE WITH BREADTH-DRAUGHT RATIO AND LENGTH-DISPLACEMENT RATIO", RINA, 1966

RES, Background

Lackenby, H. and Slater, C., "THE CASE FOR MULTI-HULL SHIPS WITH PARTICULAR REFERENCE TO RESISTANCE CHARACTERISTICS", Naval Architecture Report No. 48, 1966, British Ship Research Association, Wallsend Research Station, Wallsend, Northumberland.

RES, Background

Lamb, H. "ON THE EFFECT OF THE WALLS OF AN EXPERIMENTAL TANK ON THE RESISTANCE OF A MODEL", Advisory Committee for Aeronautics, Aeronautical Research Committee Reports and Memoranda No. 1010, January 1926.

RES, Background

Landweber, L., "REANALYSIS OF BOUNDARY-LAYER DATA ON A FLAT PLATE," Iowa Institute of Haydraulic Research, October 1960

RES, Background

Landweber, L. & Eisenberg, P., "CHARACTERISTICS CURVES FOR PLANING SURFACES", NSRDC Report No. R-80, January, 1943.

RES, Background

Lippisch, A.M., and Colton, R.F., "STEPPED PLANING BOATS, SOME FULL-SCALE TEST RESULTS," T&R Report R-9, (Panel H-12), SNAME, May 1970.

RES, Background

Lippisch, A.M., et. al. "RESEARCH IN THE DESIGN AND TESTING OF PLANING BOATS," Collins Engineering Report 1117-7, August 1962. Collins Radio Company, Cedar Rapids Div., Cedar Rapids, Iowa.

RES, Background

Locke, F.W.S., Jr., "FRICTIONAL RESISTANCE OF PLANING SURFACES", Davidson Laboratory Tech. Memo No. 40, July 1939.

RES, Background

Locke, F.W.S., Jr., "TESTS OF A FLAT BOTTOM PLANING SURFACE TO DETERMINE THE INCEPTION OF PLANING," NAVAER DR Report 1096, Bureau of Aero., Navy Dept., Dec. 1948

RES, Background

Locke, F.W.S., Jr., "AN EMPIRICAL STUDY OF LOW ASPECT RATIO LIFTING SURFACES WITH PARTICULAR REGARD TO PLANING CRAFT", Journal Aero Science, March 1949, Pgs 184-188, Vol. 16, No.3.

RES, Background

Lord, L., "MONOHEDRON HULL, AN APPRAISAL," The Planimeter, January 1950, SSCD.

RES, Background

Lucking, "THE DESIGN OF MARINE AIRCRAFT IN RELATION TO SEAWORTHINESS", Journal of the Royal Aeronautical Society, November 1923.

RES, Background

Lueders, D.H., "PREDICTED EHP AND TRIM CHARACTERISTICS FOR HIGH SPEED LCM-SCHEME C", Davidson Laboratory Report No. 718, October 1958.

RES,Background

Lueders, D.H., "PREDICTED EHP AND TRIM CHARACTERISTICS FOR 70 FOOT CATAMARAN", Davidson Laboratory Report No. 846, May 1961.

RES,Background

Martinof, "DATA FOR THE DESIGN OF HYDROGLIDERS", Two articles published in the Soviet magazine, SAMOVET, No. 12, 1936, and No. 2, 1937.

Early work on porpoising.

RES,Background

Marwood, W.J. and Silverleaf, A., "DESIGN DATA FOR HIGH SPEED DISPLACEMENT-TYPE HULLS AND A COMPARISON WITH HYDROFOIL CRAFT", Third Symposium on Naval Hydrodynamics, ACR-65, Supt. of Documents, U.S. Government Printing Office, Washington, D.C..

RES,Background

Marwood, and Silverleaf, DISCUSSION IN RELATION TO PAPER ON "DESIGN DATA FOR HIGH SPEED DISPLACEMENT HULLS AND A COMPARISON WITH HYDROFOIL CRAFT", Third Symposium on Naval Hydrodynamics, Wageningen, 1960.

RES,Background

McBride, E.E., "AN EXPERIMENTAL INVESTIGATION OF THE SCALE RELATIONS FOR THE IMPINGING WATER SPRAY GENERATED BY A PLANING SURFACE. NACA Technical Note 3615.

RES, BACKGROUND

McGehee, J.R., Weinflash, B. and Pelz, C.A., "THE HYDRODYNAMIC PLANING LIFT OF FOUR SURFACES AS MEASURED IN A 200-FPS FREE JET," NACA RM L54F01, July 1954.

Four types of planing surfaces were tested on a rectangular free-water jet 3 inches wide by 3/4 inch deep at speeds varying from 80 to 200 fps. No large effect of speed was obtained on any of the models tested but the lift coefficients for the flat plate and the longitudinally curved surface appeared to increase slightly with speed in the higher portion of the speed range. The lift data for the flat plate and the hydroski obtained on the free-water jet were less than those obtained for similar surfaces in comparatively unrestricted towing tanks. For the trims and length-beam ratios investigated, the ratio of tank lift data to jet lift data for the flat plate appeared to be a function of the ratio of the height of the trailing edge of the model above the lower jet boundary to the wetted length.

RES,Background

McKann, R., and Coffee, C.W., "HYDRODYNAMIC CHARACTERISTICS OF AERODYNAMICALLY REFINED PLANING TAIL HULLS", NACA RM L9B04.

RES, Background

Meyer, E.R., and Sherman, P., "MODEL TEST RESULTS AND PREDICTIED EHP FOR A 40-FT. HIGH SPEED LCVP FROM TESTS OF MODELS 4613, 4613-1 AND 4613-2", David Taylor Model Basin Report 1208, Prepared for the Bureau of Ships. Distributed only upon their specific authorization.

A model of a new design for a 40 ft. high speed LCVP was tested to determine effective horsepower requirements as displacement of 18,000, 26,000 and 30,000 lb. Modifications to the hull form and the addition of bow and side spray strips were required to obtain satisfactory performance. The final version of the model, with bow and side spray strips, was tested at the DTMB standard condition for landing craft, and also its performance was compared with that of the World War II LCVP.

RES, Background

Miller, E.R. and Lindenmuth W.T., "OPTIMUM CHARACTERISTICS FOR HIGH SPEED AMPHIBIANS," Technical Report 742-2, Hydronautics, Inc. March 1968.

RES, Background

Missalek, R., "MODEL TESTS FOR A 9M - AUTOBOAT," Versuchsanstalt fur Wasserbau und Schiffbau, Report No. 322/65.

RES, Background

Missalek, R., "MODEL TEST FOR A 30 KN - MOTOR YACHT," Versuchsanstalt fur Wasserbau und Schiffbau, Report No. 314/65.

RES, Background

Monk, E., "THE WEDGE, EXPERIMENTS TO MEASURE ITS EFFECTIVENESS IN LIFTING AND LEVELING HULLS," Yachting, January 1958. Reprinted in Technical Yachting, from Yachting Publishing Co., New York.

RES, Background

Moore, W.L. and Hawkins, F., "PLANING BOAT SCALE EFFECTS ON TRIM AND DRAG (TMB SERIES 56)", NSRDC, Hydromechanics Laboratory, Tech. Note No. 128, March 1969.

RES, Background

Moore, W.L., "CAMBERED PLANING SURFACES FOR STEPPED HULLS---SOME THEORETICAL AND EXPERIMENTAL RESULTS", DTMB Report 2387, Feb. 1967, AD-816314.

Johnson's method for supercavitating hydrofoils at zero cavitation number has been programmed to calculate the lift, drag, and center of pressure of cambered planing surfaces (as well as supercavitating foils) of zero deadrise and rectangular planform.

Very high lift/drag ratios are predicted by this method for cambered planing surfaces operating at practical trim angles.

Test run on planing surface models of the circular-arc and three-term shape gave somewhat higher lift/drag ratios than those predicted by the theory.

RES, Background

Moss, J.L., "RESISTANCE TEST RESULTS FOR 1/12 TH SCALE MODELS OF THREE PLANING CATAMARANS." University of Michigan, Dept of N.A. and M.E., Report 02644, July 1969 for Grafton Boat Co., Inc.

RES, Background

Mottard, E.J., "EFFECT OF CONVEX LONGITUDINAL CURVATURE ON THE PLANING CHARACTERISTICS OF A SURFACE WITHOUT DEAD RISE", NASA Memo 1-25-59L, February 1959.

The effects of convexity were to increase the wetted length-beam ratio (for a given lift), to decrease the lift-drag ratio, to move the center of pressure forward, and to increase the trim for maximum lift-drag ratio as compared with values obtained for a flat surface. The effects were greatest at low trims and large drafts. The maximum negative lift coefficient based on the model beam obtainable with a ratio of the radius of curvature to the beam of 20 was -0.02. The effects of camber were greater in magnitude for convexity than for the same amount of concavity.

RES, Background

Mottard, E., "A BRIEF INVESTIGATION OF THE EFFECT OF WAVES ON THE TAKE-OFF RESISTANCE OF A SEAPLANE", NASA TN D-165, December 1959.

An evaluation was made of the resistance of high-speed seaplane in waves of three heights. Various conditions were investigated for a seaplane having a dead-rise of 20°, a length-beam ratio of 15, and a wing loading of 120 pounds per square foot. The resistance was greater in waves than in smooth water and increased wave height. The increase was greatest between hump speed and take-off (in 6-foot waves the maximum increase was 65 percent at a speed equal to 70 percent of getaway speed). The increase in resistance was nearly the same with dead-rise angles of 40° and 60° as with the 20° dead-rise angle.

RES, Background

Mottard, E.J., "HYDRODYNAMIC CHARACTERISTICS OF A PLANING SURFACE WITH CONVEX LONGITUDINAL CURVATURE AND AN ANGLE OF DEAD RISE OF 20°", NASA TN D-180, January 1960.

Wetted length, resistance, and center-of-pressure location were determined for a radius of curvature of 20 beams, beam-load coefficient C_Δ from -3 to 37, Froude numbers from 6 to 25, and Reynolds numbers from 5×10^5 to 10^7. Compared with a 0°-dead-rise surface with the same curvature, the 20°-dead-rise surface had (for the same lift) greater wetted-length-beam ratio, lower lift-drag ratio, more forward center-of-pressure location, and had greater trim for maximum lift-drag ratio. Except for very low trims, the variation of the center-of-pressure location with wetted length was nearly the same for an angle of dead rise of 20° as for an angle of dead rise of 0°.

RES, Background

Murray, A.B. and Barklie, J.A., "RESISTANCE AND TRIM OF HEAVY DISPLACEMENT STANDARD SERIES SHIPS," E.T.T. Report No. 270, January 1945.

An extension of the Taylor Standard Series to higher displacement length ratios and speed/length ratios typical of free-running tugs.

RES, Background

Murray, A.B., "THE HYDRODYNAMICS OF PLANING HULLS", SNAME, Transactions, 1950.

RES, Background

Murray, A.B., "SMOOTH AND ROUGH WATER TESTS OF 70 - FOOT HIGH SPEED POWER BOAT," Davidson Laboratory Letter Report No. 1039, October, 1964.

RES, Background

Nowacki, H., et al, "EXPERIMENTS ON THE RESISTANCE OF A FAMILY OF BOXLIKE HULL FORMS FOR AMPHIBIOUS VEHICLES", University of Michigan, Dept. of Naval Architecture and Marine Engineering, Ann Arbor, Michigan, September 1968.

Resistance, trim, and sinkage were measured for a family of hull shapes derived from a simple box-like parent, similar to present amphibians. The data were analyzed to reach conclusions as to the feasibility of major resistance reductions, the effects of drastic variations in hull proportions, and the presence of scale effects.

RES, Background

Nutku, A., "SOME CONSIDERATIONS ON THE RESISTANCE OF PLANING HULLS", ISP, Vol. 12, October 1965, No. 134.

RES, Background

Ogilvie, T. F., "WAVE RESISTANCE: THE LOW SPEED LIMIT," August 1968, University of Michigan, Department of Naval Architecture Report No. 002.

RES, Background

Pannel, J.R., and Griffiths, E.A., "DETERMINATION OF THE FORCES AND MOMENTS ACTING ON A MODEL OF A FLYING BOAT HULL", Advisory Committee for Aeronautics (England), Aeronautical Research Committee, Reports and Memoranda No. 223, August 1915.

RES, Background

Parkinson, J.B., "TANK TEST TO SHOW THE EFFECT OF RIVET HEADS ON THE WATER PERFORMANCE OF A SEAPLANE FLOAT," NACA Tech Note 657, July 1938.

RES, Background

Parkinson, J.B., and Olson, R.E., "TANK TESTS OF AN ARMY OA-9 AMPHIBIAN," NACA ARR. Dec. 1941.

RES, Background

Patullo, R.N.M., and Thomson, G.R., "THE BSRA TRAWLER SERIES (PART I) BEAM-DRAUGHT AND LENGTH-DISPLACEMENT RATIO SERIES RESISTANCE AND PROPULSION TESTS," RINA, 1965.

RES, Background

Patullo, R.N.M., "THE BSRA TRAWLER SERIES (PART II) BLOCK COEFFICIENT AND LONGITUDINAL CENTER OF BUOYANCY VARIATION SERIES, RESISTANCE AND PROPULSION TESTS," RINA 1968.

RES, Background

Penny, "SEAPLANE DEVELOPMENT," Journal of the Royal Aeronautical Society, September 1927.

RES, Background

Perry, B., "THE EFFECT OF ASPECT RATIO ON THE LIFT OF FLAT PLANING SURFACES", Hydrodynamics Lab. CIT, Report E-24.5 September 1952. There is a list of 17 references on pgs. 17-18.

RES, Background

Pierson, J.D., "A PRACTICAL HYDRODYNAMIC THEORY FOR THE SOLUTION OF PLANING AND IMPACT PROBLEMS," Glen Martin Company, Engineering Report 2161, August 1945.

RES, Background

Pierson, J.D., & Leshnover, S., "AN ANALYSIS OF THE FLUID FLOW IN THE SPRAY ROOT AND WAKE REGIONS OF FLAT PLANING SURFACES", IAS Fairchild Fund preprint No. 166, Oct. 1948, also ETT Report No. 335.

RES, Background

Pierson, J.D.; Dingee, D.A. and Neidinger, J.W., "A HYDRODYNAMIC STUDY OF THE CHINES-DRY PLANING BODY", S.I.T, E.T.T. Report 492, June 1954.

RES, Background

Pope, J.D., "THE PLANING CHARACTERISTICS OF A V-SHAPED PRISMATIC SURFACE WITH 70 DEGREE DEAD RISE," NSRDC Report No. 1285, December 1958. AD 210-942.

RES, Background

Pournaras, U.A. and Sherman, P., "MODEL TEST RESULTS AND PREDICTED EHP FOR A ROUND BILGE 40 FT. AIRCRAFT RESCUE BOAT DESIGN FROM TESTS OF MODEL 4525," DTMB Report 1002, October 1955. (Prepared for the Bureau of Ships, Distributed only upon specific BuShips authorization) AD-086-821L.

Model 4525, a round bilge 40 ft. AVR design, was tested to determine the effective horsepower requirements for the full scale craft. The Model was tested at displacements corresponding to 20,000 25,000 and 30,000 lbs, full scale; all tests were zero initial trim. Different spray strip positions were tested in an effort to determine the most satisfactory location.

RES, Background

Rennie, "SOME NOTES ON FLYING BOATS," Journal of the Royal Aeronautical Society, No. 148, April 1923.

RES, Background

Richardson, H.C., "HYDROMECHANIC EXPERIMENTS WITH FLYING BOAT HULLS", Smithsonian Miscellaneous Collections Vol. 62, April 20, 1914.

RES, Background

Richardson, H.C." AIRPLANE AND SEAPLANE ENGINEERING", Bureau of Aeronautics Tech. Note No.59, 1923; Aerial Age Weekly, 1918-1919

RES, Background

Richardson, H.C., "THE TREND OF FLYING BOAT DEVELOPMENT," ASNE, May 1926, Vol. 38, pp. 231-253.

"Contains a great deal of information which still remains of value (1955) in studying and predicting the behavior of planing craft " - Saunders.

RES, Background

Richardson, H.C., "DESIGN OF A LARGE FLYING BOAT", SNAME, Transactions, 1928

RES, Background

Ridgely-Nevitt, C., "THE RESISTANCE OF TRAWLER HULL FORMS OF 0.65 PRISMATIC COEFFICIENT," SNAME, 1956.

RES, Background

Roach, C.D., "TUGBOAT DESIGN," Transactions, SNAME 1954.

RES, Background

Sambraus, A., "PLANING-SURFACE TESTS AT LARGE FROUDE NUMBERS - AIRFOIL COMPARISON," NACA Tech. Memo. No. 848, 1938.

RES, Background

Savitsky, D., "WETTED LENGTH AND CENTER OF PRESSURE OF VEE-STEP PLANING SURFACES," E.T.T. Stevens Institute of Technology, Report 378, September 1951, Published by IAS as S.M.F. Fund Paper FF-6 of the same date.

24 References on pp. 25-27.

RES, Background

Savitsky, D. and Ross, E.W., "TURBULENCE STIMULATION IN THE BOUNDARY LAYER OF PLANING SURFACES, PART II, PRELIMINARY EXPERIMENTAL INVESTIGATION," August 1952, S.I.T. E.T.T. Report 444, AD 96-906.

RES, Background

Savitsky, D. and Dingee, D.A., "SOME INTERFERENCE EFFECTS BETWEEN TWO FLAT SURFACES PLANING PARALLEL TO EACH OTHER AT HIGH SPEED," S.I.T.,ETT Paper published in Readers Forum Section of the Journal of Aeronautical Sciences, June 1954.

RES,Background

Savitsky, D., Prowse, R., and Lueders, D. Stevens Institute of Technology, "HIGH-SPEED HYDRODYNAMIC CHARACTERISTICS OF A FLAT PLATE AND 20° DEAD-RISE SURFACE IN UNSYMMETRICAL PLANING CONDITIONS", NACA TN 4187 June 1958 Also Davidson Lab. Report 550, March 1957.

The results of an investigation made to obtain the wetted areas, the three components of planing forces, and the three components of moments acting on a 0° and a 20° dead-rise surface in high-speed, unsymmetrical planing conditions are presented. Hydrodynamic data were obtained for trim angles between 6° and 30°, roll angles between -15° and 15°, yaw angles between 0° and 20°, mean wetted-length-beam ratios up to 7.7, load coefficients up to 49.0, and speed coefficients up to 18.0.

RES,Background

Savitsky, D. and Breslin, J., "ON THE MAIN SPRAY GENERATED BY PLANING SURFACES," SMF FUND Paper No. FF-18, Inst. of Aeronautical Sciences, N.Y., January 1958, also S.I.T., ETT Rep. 678.

RES,Background

Savitsky, D. "EFFECTIVENESS OF TURBULENCE INDUCING STRUTS IN MODEL TESTS OF PLANING HULLS", S.I.T.E.T.T. Tech Note No. 702, July 1963.

RES,Background

Sayre, C. Jr., "MODEL TEST RESULTS AND PREDICTED EHP FOR THE HURON-EDDY COMPANY 55 FOOT RESCUE BOAT DESIGN FROM TESTS OF MODEL 4434," NSRDC Report No. 843, October 1952. Distribution only upon authorization of Huron -Eddy Company.

RES, Background

Schinke, A., and Puchstein, K., "RESISTANCE TOWING TESTS WITH CATAMARAN MODELS," (in German) Schiffbautechnik, 16 August 1966, p 423.

RES,Background

Schinke, A., and Puchstein, K., "A CONTRIBUTION TO THE STUDY OF CATAMARAN RESISTANCE", (in German) Schiffbauforschung, 6, 1967.

RES,Background

Schoenherr, K.E., "RESISTANCE OF FLAT PLATES MOVING THROUGH A FLUID," SNAME, 1932.

RES, Background

Schwanecke, H., "THEORETICAL AND EXPERIMENTAL RESEARCH OF THE FLOW BEHIND SLIDING PLANES OR HYDROFOILS," Versuchsanstalt fur Wasserbau & Shiffbau Report 223/62.

RES,Background

Sedov. L.I., PLANNING ON A WATER SURFACE," RTP Translation 2506, British Min. Aircraft Prod. (from Tech. Vosdushnogo Flota, No 4-5, 1940). Also Durand Reprinting Committee, CIT, Pasadena 4, Calif.

RES, Background

Sedov, L.I., "SCALE EFFECT AND OPTIMUM RELATIONS FOR SEA SURFACE PLANING," NACA Tech. Memo 1097, February 1947.

RES, Background

Shaw, P.S., "RESULTS OF TESTS ON A MODEL OF A 27 FOOT MOTOR CUTTER," MB-162, 6 Nov. 1953 National Research Council of Canada.

RES,Background

Shaw, P.S., "RESULTS OF TESTS ON A MODEL OF A 27 FOOT WHALER," MB-164, November 1953. National Research Council of Canada.

RES, Background

Shaw, P.S., "RESULTS OF TESTS ON A MODEL OF A 27 FOOT LANDING CRAFT WITH PRELIMINARY PROPELLER DIMENSIONS," MB-172, 25 May 1954, National Research Council of Canada.

RES, Background

Sherman, P., "MODEL TEST RESULTS AND PREDICTED EHP FOR A HARD CHINE 40 FT. LCP (L) FROM TESTS OF MODEL 4618," DTMB Report 1095, November 1956, prepared for the Bureau of Ships. Distributed only upon their specific authorization. AD 145-073L.

A model of a hard chine 40 ft. LCP(L) was tested to determine the EHP requirements at displacements of 17,500, 20,000, 22,500, and 25,000 lb. After these tests the concavity at the stern of the model was reduced and the model retested at the 20,000 lb. displacement. The modified model was also tested at the DTMB standard condition for planing hulls, both with and without the keel.

RES, Background

Sherman, P., "MODEL TEST RESULTS AND PREDICTED EHP FOR HIGH SPEED LCM 6 FROM TESTS OF MODEL 4629 AND 4649," NSRDC Report No. 1205, December 1957. AD 205-651L.

RES, Background

Sherman, P. and Pope, J.D., "MODEL TEST RESULTS AND PREDICTED EHP FOR TWO DESIGNS OF A 36-FT. LCVP FROM TESTS OF MODELS 4654 AND 4664," NSRDC Report No. 1226, March 1958. Distributed only upon authorization of the Bureau of Ships. AD 206-308L.

RES, Background

Sherman, P., "MODEL TEST RESULTS AND EHP FOR A HIGH SPEED LCM 8 FROM TESTS OF MODEL 4636," NSRDC Report No. 1218, February 1968. Distributed only upon authorization of BUSHIPS. AD 205-650L.

RES, Background

Sherman, P., and Meyer, E.P., "MODEL TEST RESULTS AND PREDICTED EHP FOR A 40 FT. HIGH SPEED LCVP FROM TESTS OF MODELS 4613, 4613-1, AND 4613-2," NSRDC Report No. 1208, January 1958, AD 205-568L, Distributed only upon authorization of BUSHIPS.

RES, Background

Sherman, P., " TESTS OF A PLANING BOAT MODEL WITH PARTIAL HYDROFOIL SUPPORT," DTMB Report 1254, August 1958.

A model of a planing boat was equipped with two horizontal submerged hydrofoils which were designed to carry part of the weight of the craft. The foils were located forward of the center of gravity. Smooth-water resistance tests were made with foils at various fore-and-aft positions and various angles of attack to determine the optimum arrangement.

Tests were also made of the foils alone. It was found that an appreciable scale effect on foil performance existed at Reynolds numbers below about $5x10^5$.

The data from the tests of the hull with foils, when corrected for scale effect on foil performance, indicated that the resistance of a planing boat can be decreased when such foils are added by as much as 27 1/2 percent. The best result was attained with the foils located at 28 percent of the hull length aft of the bow, and with the foil chord line at an angle of -3.5 deg with respect to the hull baseline.

RES, Background

Shoemaker, J.M., "TANK TESTS OF FLAT AND VEE BOTTOM PLANING SURFACES," November 1934, NACA TN 509.

RES, Background

Sholars, R.E., "AN INVESTIGATION OF THE PERFORMANCE CHARACTERISTICS OF LONG SLENDER HULLS," A Trident Scholar Report, U.S. Naval Academy, Annapolis, Maryland.

Results of Tow Tank Tests of four full-sized eight oared shells are presented. A comparison is made of the four hulls over a range of speeds. Also the effect of other parameters on performance is investigated.

RES, Background

Shubert, R. and THIEME, H., "KLARENDE DARSTELLUNG DER HYDRODYNAMISCHEN ERSCHEINUNGEN BEIM START VON SEEFLUZEUGEN (EXPLANATORY REPRESENTATION OF THE HYDRODYNAMIC PHENOMENA OCCURRING AT THE TAKEOFF OF SEAPLANES)," Bericht S110, Hamburg, 5 July 1946.

RES, Background

Shuford, C.J., "REVIEW OF PLANING THEORY AND EXPERIMENT, WITH A THEORETICAL STUDY OF PURE PLANING LIFT OF RECTANGULAR FLAT PLATES," NACA TN 3233, August 1954.

RES, Background

Shuford, C.L., Jr., "A THEORETICAL AND EXPERIMENTAL STUDY OF PLANING SURFACES INCLUDING EFFECTS OF CROSS SECTION AND PLAN FORM," NACA Report 1355 Supersedes TN 3939, 1958.

A summary is given of the background and present status of pure-planing theory. Data for models having sharp chines have been obtained for a rectangular flat plate and two V-bottom surfaces having constant angles of deadrise of 20° and 40° and also for rectangular-flat-plate surfaces having very slightly rounded chines. The theory presented in NACA Technical Note 3233 for a rectangular flat plate is revised and extended to include triangular flat plates planing with base forward and V-shaped prismatic surfaces having a constant angle of dead rise, horizontal chine flare, or vertical chine strips. The agreement between the results calculated by the proposed theory and the experimental data is satisfactory for engineering calculations of lift and center-of-pressure location.

RES, Background

Smith, M., "MODEL TESTING UNCONVENTIONAL PLANING HULLS," The Planimeter, SSCD, Jan. 67.

RES, Background

Smith, D.W. and Walker, J.H., "SKIN-FRICTION MEASUREMENTS IN INCOMPRESSIBLE FLOW," TR R-26, 1959. NASA.

RES, Background

Sokolof, N.A., "DATA FOR THE DESIGN OF HYDROGLIDERS AND FLYING BOATS", Bulletin No. 149 (1932) of the Central Aero-Hydrodynamic Institute (ZAGI) of Moscow. French translation available at the Library of Aero Club De France, Paris.

An important paper in the history of Planing Hulls.

RES, Background

Sokolov, N.A., "HYDRODYNAMIC PROPERTIES OF PLANING SURFACES AND FLYING BOATS", NACA TM 1246, October 1950.

RES, Background

Sottorf, W., "VERSUCHE MIT GLEITFLACHEN (TESTS WITH GLIDING SURFACES)," Part I, WRH, 7 November 1929: English Translation in NACA TM 661, March 1932.

Historical work on planing.

RES, Background

Sottorf, W., "EXPERIMENTS WITH SKIMMING PLANES, PART I TO IV", May 1933. Translation by Miss S. Skan, Aeronautical Research Committee Seaplane Subcommittee.

RES, Background

Sottorf, W., "EXPERIMENTS WITH PLANING SURFACES", NACA TM 661, 1932 and NACA TM 739, 1934.

Experiments with planing surfaces are fundamental hydrodynamic researches for the purpose of obtaining the most favorable forms for planing boats, flying boats, and seaplane floats, with respect to water resistance and seaworthiness.

RES, Background

Sottorf, W., "GESTALUNG VON SCHIMMWERKEN (THE DESIGN OF PLANING FLOATS)", Luftfahrtforschung, 20 April, 1937; English Translation in NACA T.M. 860, April 1938.

Historical work on planing.

RES, Background

Sottorf, W., "ANALYSIS EXPERIMENTELLER UNTERSUCHUNGEN UBER GLEITVORGANG AN DER WASSEROBER FLACHE (ANALYSIS OF EXPERIMENTAL INVESTIGATION OF THE PLANING PROCESS ON THE SURFACE OF WATER)", Jahrbuch der Deutschen Luftfahrtforschung, 1937; English translation in NACA TM 1061, March, 1944.

Historical work on planing.

RES, Background

Sottorf, W., "VERSUCHE MIT GLEITFLACHEN, PART IV, (TESTS WITH PLANING SURFACE, PART IV," Werft-Reederei-Hafen, 1 March 1938, 15 March, 1938.

RES, Background

Sottorf, W., "A NEW METHOD OF EXTRAPOLATING THE RESISTANCE OF A PLANING BOAT MODEL TO FULL SIZE," NACA TM 1007, 1939.

Early work on the separate computation of frictional resistance in scaling from models.

RES, Background

Spangler, P.K., "CALM WATER RESISTANCE TEST RESULTS FOR THE 1/5-SCALE PCF (MODEL 5174)", NSRDC T & E Report 289-H-01, July 1968.

RES, Background

Spooner, C.W., Jr. "SPEED AND POWER OF MOTORBOATS UP TO A SPEED-LENGTH RATIO OF THREE," "Unpublished manuscript dated October 1950; available in the TMB Library",-Saunders. University of Michigan Report.

RES, Background

Springston, G.B.Jr., "MODEL TEST RESULTS AND PREDICTED EHP FOR EXPERIMENTAL 65 FT. LANDING CRAFT (LCM) FROM TESTS OF MODEL 4416," NSRDC No. 850, July 1956. Distributed only upon specific Bureau of Ships authorization, (DDC AD 124-026L)

RES, Background

Springston, G.B., Jr., "RESISTANCE OF MODEL 4377 REPRESENTING A 52 FT. AIRCRAFT RESCUE BOAT EQUIPPED WITH PROPULSION UNIT UNDERWATER HOUSING," NSRDC Report No. 841. Distributed only upon authorization of Bureau of Ships.

RES, Background

Springston,G.B., and Sayre, C.L.,Jr., "THE PLANING CHARACTERISTICS OF A V-SHAPED PRISMATIC SURFACE WITH 50 DEGREES DEAD RISE," DTMB Report 920, February 1955. DDC-AD-056-661.

This report is one of a series on the experimental investigation of the planing characteristics of a series of related prismatic surfaces.

The principal planing characteristics have been obtained for a V-shaped prismatic surface having an angle of dead rise of 50 deg. Wetted lengths, resistance, and center of-pressure location were determined at speed coefficients up to approximately 20.0, beam-loading coefficients from 0.87 to 71.51, and trims up to 30 deg. Keel-wetted-length-beam ratios were extended to approximately 8.0 in all cases where excessive loads or excessive spray conditions were not encountered.

The data obtained indicate that the important planing characteristics are independent of speed and loan for a given trim and are dependent primarily upon lift coefficient. The difference between keel wetted length and chine wetted length is constant for a given trim angle and the variation of this difference with trim has the same general trend as indicated by theory. For practical purposes the ratio of center-of-pressure location foward of the trailing edge to the mean wetted length is a constant equal to 0.58 and is independent of teim angle. The drag data indicate that the friction-drag component is a large percentage of the total drag at the low trims, but decreases rapidly with increase in trim to a small percentage at the higher trim.

RES,Background

Squire, H.B., "THE HUMP SPEED OF BOATS AND SEAPLANES", Aeronautical Research Council (England) Seaplane Committee, March 16, 1956.

RES, Background

Stoltz, J.F., "INITIAL APPROACH TO PLANING HULL DESIGN," The Planimeter, July and August 1967, SSCD.

RES,Backgrour

Stumpf, H., "LINEARIZATION OF THE GRAVITY-AFFECTED PLANING PROBLEM (LINEARISIERUNG DES SCHWEREBEHAFTETEN GLEITPROBLEMS)," NSRDC Translation 348, Translated by Keith Kerney, Zeitschrift fur angewandts Mat atik und Mechanik, Band 47, Heft 1, Seite 31-44, 1967, October 1969

The relations between bottom shapes, pressure distribution, and drag of a planing surface in steady motion over an undisturbed free surface are investigated by carrying out a separation of the velocity potential into a part independent of gravity and a part dependent on gravity. The gravity-free velocity potential, which describes planing at infinitely large Froude number and contains all the essential irregularities of the planing problem, furnishes the gravity-free shape of the planing surface as well.

RES, Background

Suydam, H.B., "HYDRODYNAMIC CHARACTERISTICS OF A LOW DRAG, PLANING TAIL FLYING BOAT HULL", NACA RM L7110.

RES,Background

Tarbox, L.H., "REPORT ON RELATIVE RESISTANCES OF SIMILAR ROUND AND V BOTTOM MODELS," The Planimeter, August 1952, SSCD.

RES,Background

Tate, C.W., "MODEL TESTS OF A ROUND-BILGE BOAT WITH AND WITHOUT THE SNADECKI LONGITUDINAL STRAKES," DTMB Report 1281, October 1958.

A model of a round-bilge boat was tested for resistance, with and without Snadecki-type longitudinal strakes. In general, for the condition tested, the addition of the strakes caused an increase in resistance. However, at very high speeds and with the CG in an aft position, some reduction in resistance was obtained. Further effects of adding the strakes were to decrease the running trim and to increase the CG rise of the model.

RES, Background

Tate, C.W., "MODEL TESTS OF A TUNNEL-BOTTOM 36-FOOT RIVER PATROL CRAFT," DTMB Report No. 1846, May 1964. AD 600-690.

Model tests of a new and somewhat unconventional boat, the 36-foot River Patrol Craft, were made by the Model Basin. The bottom of this craft has a single deep tunnel forward which gradually decreases convexly in depth to a flat bottom of 60 percent of the hull length. There it bisects into two shallow tunnels which are symmetrical about their centerlines. The afterbody tunnels increase in depth to the transom.

During the tests it was discovered that the single tunnel forward collected an appreciable quantity of air which then migrated aft past the propeller positions in the tunnels of the afterbody and from there astern into the wake.

RES, Background

Tate, C.W., "RESULTS OF SMOOTH-WATER EHP TESTS OF A MODEL OF THE COVED-CHINE CALE PLANING BOAT", DTMB Report No. P-020-H-01, October 1964. Prepared for the Bureau of Ships. Distributed only upon their authorization.

RES, Background

Taylor, F.R.S., "SCIENTIFIC METHODS IN AERONAUTICS," Aeronautical Journal, September 1921.

RES, Background

Telfer, E.V., "THE DESIGN PRESENTATION OF SHIP MODEL RESISTANCE DATA", NECI, 1962-63.

RES, Background

Thew, C., "ENTRANCE PRISMATIC COEFFICIENT-THE KEY TO CORRELATION OF RANDOM TUG RESISTANCE DATA", Ship and Boat International, March 1969.

RES, Background

Todd, F.H., "FURTHER MODEL EXPERIMENTS ON THE RESISTANCE OF MERCANTILE SHIP FORMS COASTER VESSELS", INA 1931.

RES,Background

Todd,F.H.,and Weedon, J., "EXPERIMENTS WITH MODELS OF CARGO-CARRYING TYPE COASTERS", IME 1940.

RES,Background

Todd, F. H. and Weedon, J., " FURTHER EXPERIMENTS WITH MODELS OF CARGO-CARRYING COASTERS", NECI 1942.

RES,Background

Todd, F.H., "SERIES 60-METHODICAL EXPERIMENTS WITH MODELS OF SINGLE-SCREW MERCHANT SHIPS," DTMB Report 1712, 1963.

RES, Background

Townsend, C., "AN INVESTIGATION OF THE MODE OF FLOW AND VISCOUS DRAG FORWARD OF THE STAGNATION LINE ON A CAMBERED PLANING SURFACE", 1967, University of Michigan, Naval Architecture Research Office.

RES,Background

Truscott, S., "THE ENLARGED NACA TANK AND SOME OF ITS WORK", NACA Tech Memo 918, 1939.

RES, Background

Tulin, M.P., "THE THEORY OF SLENDER SURFACES PLANING AT HIGH SPEEDS," Schiffstechnic, Band 4 (1956-1957), Heft 21, pp. 125-133.

RES, Background

(Unknown), "FLYING BOATS, GENERAL DATA ON EFFECT OF DIMENSIONS, DETAILS OF FORM FOR GOOD RESULTS, AND SOME STRENGTH DATA", NECI, February 1920.

RES, Background

(Unknown) "EXPERIMENTS WITH MODELS OF FLYING BOAT HULLS AND SEAPLANE FLOATS, 22ND SERIES" Advisory Committee for Aeronautics (England), Aeronautical Research Committee Reports and Memoranda No. 785, January 1922.

RES, Background

(Unknown) "D.T.TWIN FLOATS; REPORT OF THE ADDITIONAL EXPERIMENTS WITH MODEL NO. 2394", U.S. Experimental Model Basin, Washington, D.C., Report No. 103, November, 1924.

RES, Background

(Unknown), "BESTIMMUNG DES WILDERSTANDES VON MOTORBOOT SANHANGEN", Versuchsanstalt Fur Wasserbau Und Schiffbau, Berlin, 1961, Bericht Nr. 205/61.

Model test of Shaft, Strut, and Rudder.

RES, Background

(Unknown), "THE DEVELOPMENT OF FLYING BOATS", Aeroplane, January 16, 1924.

RES, Background

(Unknown), "FLOAT TYPES, GENERAL REQUIREMENTS", INA Transactions, July 1914.

RES, Background

Unknown, "TOWING TESTS OF A PROPOSED 5-TON HIGH SPEED AMPHIBIAN," Davidson Laboratory Report No. LR-652, July 1957.

Curves of resistance for heavily loaded inverted-Vee hull form at various displacemenets and LCG's in smooth water and waves.

RES, Background

Unknown, "TOWING TESTS OF A 1/16 SCALE MODEL OF A 40 FOOT V-BOTTOM PLANING AMPHIBIAN WITH LOW CHINE FORWARD (SEA HORSE B)," Davidson Laboratory Report LR-745, May 1959.

RES, Background

Van Dyck, R.L., "FINAL ENGINEERING REPORT ON WAKE SHAPES OF PLANING FORMS ASSOCIATED WITH HIGH SPEED WATER-BASED AIRCRAFT", Davidson Laboratory Report No. 768, October 1960.

RES, Background

Van Mater, P.R., "HYDRODYNAMICS OF HIGH SPEED SHIPS", DL Report 876, October 1961, PB 181-102.

RES,Background

Van Mater, P.R., and Dornak, H.E.Jr., "HYDRODYNAMIC CHARACTERISTICS OF BASIC PLANING HULL TYPES", Great Lakes Section, SSCD, April 3, 1965.

RES, Background

Wadlin, K.L. and MCGehee, J.R., "PLANING CHARACTERISTICS OF THREE SURFACES REPRESENTATIVE OF HYDRO-SKI FORMS," NACA RM No. L9C03, March 1949.

The planing characteristics as determined by tank tests, are presented for three surfaces representative of hydro-ski forms. One surface was of rectangular plan form with a flat bottom; the second surface had a rectangular plan form with transversely curved bottom; and the third surface had a flat bottom but was triangular in plan form. The range of trims investigated was 4° to 20°. The data are presented in the form of plots of the total load, resistance, trimming moment, and draft against wetted area. Plots of wetted length, wetted area foward of the observed wetted length at the chine, and aerodynamic tare forces are included.

RES, Background

Wadlin, K.L. and McGehee, J.R., "PLANING CHARACTERISTICS OF SIX SURFACES REPRESENTATIVE HYDRO-SKI FORMS," NACA RM L9L20, February 1950.

The Planing characteristics are presented for six planing surfaces. The surfaces varied in plan form and transverse bottom curvature. The plan forms included rectangles, triangles, and their combinations. The bottom curvatures included flat, convex, and concave-convex transverse sections. The ranges of trims and speeds investigated were 4° to 20° and 15 to 35 feet per second. The data are presented in the form of plots of wetted length, load, resistance, trimming moment, and draft against wetted area. Plots of wetted area forward of the observed wetted length at the chine are included.

RES, Background

Wadlin, K.L. and Christopher, K.W., "A METHOD FOR CALCULATING DYNAMIC LIFT FOR SUBMERGED AND PLANING RECTANGULAR LIFTING SURFACES," NACA TN 4168, January 1958.

RES, Background

Wagner, H., "PLANING OF WATERCRAFT," 1933 Paper. NACA TM 1139, 1948 Translation.

Early work on theory of planing.

RES, Background

Wand, D.P. and Rispin, P., "THREE DIMENSIONAL PLANING AT HIGH FROUDE NUMBER", NSRDC Report 70-003, May 1970.

RES, Background

Ward, K.E., "A NEW METHOD OF STUDYING THE FLOW OF THE WATER ALONG THE BOTTOM OF A MODEL OF A FLYING BOAT HULL," NACA Tech. Note No. 749.

RES, Background

Warholm, A.O., and Lindgren, H., "FURTHER TESTS WITH MODELS OF COASTERS", SSPA Publications No. 35, 1955.

RES, Background

Weinig, F., "ON THE THEORY OF HYDROFOILS AND PLANING SURFACES," NACA Tech Memo. No. 845.

RES, Background

Weinstein, I. and Kapryan, W., "THE HIGH-SPEED PLANING CHARACTERISTICS OF A RECTANGULAR FLAT PLATE OVER A WIDE RANGE OF TRIM AND WETTED LENGTH", NACA TN 2981, July 1953.

The principal high-speed planing characteristics for a prismatic surface having an angle of dead rise of 0° (flat bottom) have been determined over a wide range of planing variables. Wetted length, resistance, center-of-pressure locations, and draft were determined at speed coefficients ranging up to 25.0, beam loadings up to 87.3, and trims up to 30°. Mean wetted lengths up to 7.0 beams were obtained whenever possible.

RES, Background

Wilson, C.J., "A COMPARISON OF THE EFFECTIVE HORSEPOWER OF TWO DESIGNS OF AN LCVP REPRESENTED BY MODELS 4031 AND 4032", NSRDC Report No. 619, December, 1947.

RES, Background

Wittholz, C.W., "PLANING BOAT DESIGN COMMENTS," The Planimeter 12/59 - 1/60, SSCD.

RES, Background

Yokoo, K., and Tasaki, R., "ON THE TWIN HULL SHIP (1)" AND "ON THE TWIN HULL SHIP (2)", Translation by H.C. Kim of two Japanese Papers on Catamarans-University of Michigan, Dept. of Naval Architecture, October 1962. AD 454714.

RES, Background

Yokoo, K. and Takahashi, H., "TANK EXPERIMENTS ON A HYDROPLANE MODEL," Report No. 42 of the Transportation Technical Research Institute, Japan.

RES, Background

Anonymous, "GAY CLASS FAST PATROL BOAT. FINAL EHP AND RUNNING RISE AND TRIM CURVES", Admiralty Experiment Works.

RES,

Anonymous, "GAY CLASS FAST PATROL BOATS. RESISTANCE AND RUNNING RISE AND TRIM WITH TRANSOM FLAPS." Admiralty Experiment Works, Report No. 77/54.

RES,

Clement, E.P., "EHP AND FLOW TESTS OF A TUNNEL-BOTTOM RECONNAISSANCE BOAT, MODELS 4389 AND 4389-1", NSRDC Report No. 1210, February, 1968, AD 205-643L Distributed only upon authorization of BUSHIPS.

RES,

Muller, B., "DETERMINATION OF THE RESISTANCE OF APPENDAGES FOR MOTOR BOATS", Report No. 205/61, Versuch sanstalt, Fur Wasserbau Und Schiffbau.

RES,

Takagi, A., Inui, T., and Nakamura, S., "GRAPHICAL METHODS FOR POWER ESTIMATION OF FISHING BOATS", Tokyo, Fisheries Agency, 1950.

RES,

Garcia, A.F., "WATERJET PUMP PERFORMANCE DETERMINATIONS," ASNE Journal, October 1970.

A concise presentation of the principles of waterjet propulsion systems.

PROP, Essential

Van Manen & Oosterveld, "ANALYSIS OF DUCTED PROPELLER DESIGN", SNAME Transactions, 1966

PROP, Essential

Anonymous, "EXPERIMENTAL INVESTIGATION OF A WATER JET PROPULSION UNIT FOR SHALLOW DRAFT BOATS", Hydrouautics, Inc. Tech Report 516-2, May 1966.

Water jet for a 1 ton payload, 20 knot boat tested in the High Speed Channel at Hydronautics, Inc. at static conditions for both forward and reverse thrust and at various forward speeds.

Prop, Useful

Arcand, L., "WATERJET PROPULSION FOR SMALL CRAFT," Symposium on Small Craft Hydrodynamics SNAME, Southeast Section, May 1966.

PROP, Useful

Blount, D.L., "CORRELATION OF FULL-SCALE TRIALS AND MODEL TESTS FOR A SMALL PLANING BOAT", RINA, March 27, 1968.

PROP, Useful

Brandau, J.H., "ASPECTS OF PERFORMANCE EVALUATION OF WATERJET PROPULSION SYSTEMS AND A CRITICAL REVIEW OF THE STATE OF THE ART", NSRDC Report No. 2550. October, 1967; Also AIAA Paper No. 67-360

PROP, Useful

Buhler, J.E. & Arthur, P.D., "AN APPROACH TO PROPELLER SELECTION FOR SMALL CRAFT", Symposium on Small Craft Hydrodynamics, SNAME, Southeast Section, May, 1966.

PROP, Useful

DeGroot, D., "RESISTANCE AND PROPULSION OF MOTORBOATS, (WEERSTAND EN VOORTSTUWING VAN MOTORBOTEN)," Publication No. 93 of the Model Basin in Wageningen. DTMB Translation No. 244 by W.B. Hinterthan, January 1956. Also ISP, 1955 Vol.2, No. 6.

Estimates of wake fraction and appendage resistance.

PROP, Useful

Gawn, R.W.L., and Burrill, L.C., "EFFECT OF CAVITATION ON THE PERFORMANCE OF A SERIES OF 16 IN. MODEL PROPELLERS", INA, 1957.

PROP, Useful

Hadler, J.B., "THE PREDICTION OF POWER PERFORMANCE OF PLANING CRAFT," SNAME 1966, Transactions.

Detailed methods for estimating appendage drag and propeller performance, including effects on operating trim and therefore hull drag.

PROP, Useful

Hadler, J.B., "CONTRAROTATING PROPELLER PROPULSION -A-STATE-OF-THE-ART REVIEW", SNAME, Marine Technology, July 1969.

Contains bibliography with 37 entries.

PROP, Useful

Hecker, R., "WINDMILLING AND LOCKED SHAFT PERFORMANCE OF SUPERCAVITATING PROPELLERS," NSRDC Report #1625, July 1962, AD 282-181.

PROP, Useful

Kress, R. and Lorenz E.L., "MARINE PROPELLER SELECTION," Michigan Wheel Co. SAE Paper No. 700094, January 1970.

PROP,Useful

Kruppa, F.L., "HIGH SPEED PROPELLERS: HYDRODYNAMICS AND DESIGN", A 3-day Intensive Course for Engineers, October 1967, Univ. of Michigan.

PROP,Useful

Newton, R.N. and Rader, H.P., "PERFORMANCE DATA OF PROPELLERS FOR HIGH-SPEED CRAFT," RINA, 1961.

PROP,Useful

O'Brien, T.P., THE DESIGN OF MARINE SCREW PROPELLERS , Hutchinsson and Co., Ltd. London, 1968.

PROP,Useful

Schanz F., "THE CONTROLLABLE PITCH PROPELLER AS AN INTEGRAL PART OF THE SHIP'S PROPULSION SYSTEM", Transactions, SNAME, 1967.

Covers the hydrodynamics, mechanical and control problems of CP propellers.

PROP, Useful

Tachmindji, et. al., "THE DESIGN AND PERFORMANCE OF SUPERCAVITATING PROPELLERS", NSRDC No. C-807, February 1957.

PROP, Useful

Troost, L. "OPEN WATER TEST SERIES WITH MODERN PROPELLER FORMS," NECI, 1950-51.

PROP, Useful

Van Lammeren, W.P.A., et al. "THE WAGENINGEN B-SCREW SERIES, SNAME Transactions, 1969

PROP, Useful

Van Manen, J.D., principal investigator, "TUNNEL TESTS TO ESTABLISH CAVITATION CORRECTION CURVES FOR THE WAGENINGEN B-SERIES," NSMB Report No. 68-057-CT. The Netherlands Ship Model Basin, Wageningen, May 1968.

PROP, Useful

Van Manen, J.D., (NSMB), "OPEN WATER TEST SERIES WITH PROPELLERS IN NOZZLES," ISP, Vol. I, No. 2, 1954.

This paper deals with open-water tests with propellers of the B 4-55 series in nozzles of systematically varied form. The results of the open-water tests with the "screw plus nozzle" combination are given for each form of nozzle in a Ks - Km - λ -diagram, as is usual with systematically varied series of screws (1, 2)

By means of these diagrams the optimum "screw plus nozzle" combination for the nozzle form under consideration can immediately be determined, while it is also possible to compare the efficiency with that of the screw without nozzle.

A method is discussed for determining the translational velocity in the nozzle in the vicinity of the screw.

The influence of the various parameters, decisive for the open-water "screw plus nozzle" combination, are examined as regards their importance.

Finally, attention is devoted to the framing of a condition of minimum loss of energy for the "screw plus nozzle" combination, and at the same time directions are given for cavitation-free design of the screw in the nozzle according to the vortex theory.

PROP, Useful

Acevedo, M.L., "CAVITATION ON MARINE PROPELLERS AND ITS PREDICTION BASED ON THE RESULTS OF TESTS WITH PROFILES", DTMB Translation 230, January 1951.

PROP, Background

Anonymous, "MODEL TESTS WITH A FAMILY OF THREE AND FIVE BLADED PROPELLERS," Swedish State Shipbuilding Experimental Tank No. 47, 1961.

PROP, Background

Arcand, L., "FEASIBILITY STUDY OF WATERJET PROPULSION FOR AN FT-4 POWERED LANDING CRAFT", Pratt and Whitney Aircraft Florida Research and Development Center, June 9, 1967 for J.E. Bowker Associates, Inc. (Restricted Distribution).

Prop, Background

Argyriadis, D.A., "MODERN TUG DESIGN WITH PARTICULAR EMPHASIS ON PROPELLER DESIGN, MANEUVERABILITY, AND ENDURANCE," SNAME Transactions, 1957.

PROP. Background

Beal, A.L., et. al., "POWERING CHARACTERISTICS OF AN LCVP WITH OPEN SCREW AND KORT NOZZLES FROM TESTS WITH MODEL 4031-1," DTMB Report 1406, June 1960.

PROP, Background

Bennet, R., Chaplin, P.D., Kerr, N.M., "CONTROLLABLE PITCH PROPELLERS IN LARGE STERN TRAWLERS", Transactions - Institute of Marine Engineers, Vol. 80, No. 8, 1968.

PROP, Background

Blount, D.L., "POWERING CHARACTERISTICS FOR LCM-A AS REPRESENTED BY MODEL 4746," DTMB Report 1334-2, December 1959.

Powering characteristics of the LCM-A vehicle were determined by tests conducted at the David Taylor Model Basin with Model 4746. This report describes the special procedures employed and gives the results of the propulsion tests.

PROP,Background

Blount, D.L., "SMOOTH WATER POWERING CHARACTERISTICS OF AN EXPERIMENTAL LCVP(T)," DTMB Report 2283, September 1966. AD 800-129L.

Full-scale standardization trials were conducted on an experimental LCVP designated LCVP(T) and the results are reported herein for comparison with those for a partially air supported craft, LCVP(K). Trials were conducted at four displacements with the craft free to trim. Two different propellers were utilized at one displacement. Shaft horsepower, thrust, RPM, trim, and speed are given for each condition along with wake factors.

PROP, Background

Blount, D.L., et al, "CORRELATION OF FULL-SCALE TRIALS AND MODEL TESTS FOR A SMALL PLANING BOAT", RINA Paper presented March 27, 1968.

PROP, Background

Boatwright, G.M., and Strandell, J.H., "CONTROLLABLE PITCH PROPELLERS", ASNE Journal, August 1967.

Excellent review of controllable pitch in the Navy from patrol craft to ships. 30 References.
See Also "Discussion of Controllable Pitch Propellers" in ASNE Journal, December,1967.

PROP,Background

Boswell, R.J., and Miller, M.L., "UNSTEADY PROPELLER LOADING-MEASUREMENT, CORRELATION WITH THEORY, AND PARAMETRIC SYSTEM", NSRDC, October 1968, AD 847-214.

PROP,Background

Brandan, J.H., Editor, "SYMPOSIUM ON PUMPING MACHINERY FOR MARINE PROPULSION", NSRDC, May 6, 1968. American Society of Mechanical Engineers, 345 East 47th St., N.Y.,N.Y. 10017.

PROP,Background

Bryner, A.M., "IS YOUR PROPELLER BIG ENOUGH FOR THE JOB," The Planimeter, October 1964 SSCD.

PROP, Background

Burrill, L.C., and Emerson, A., "PROPELLER CAVITATION: FURTHER TESTS ON 16 IN. PROPELLER MODELS IN THE KING'S COLLEGE CAVITATION TUNNEL," NECI, 1962-63.

PROP, Background

Camps, A.A., "CAVITATION PERFORMANCE OF WEEDLESS "RULE" PROPELLERS", Report No. 200-H-01, NSRDC, January 1967.

PROP, Background

Caster , E.B. "TMB 2-,3-, AND 4-BLADED SUPERCAVITATING PROPELLER SERIES," DTMB Report 1637, January 1963, AD 297-120.

PROP, Background

Clement, E.P. and Kimon, P.M., "PROPULSION CHARACTERISTICS OF A 36-FT LCP (L) FROM TESTS OF MODEL 4555," NSRDC Report No. 1162, July 1957. AD 145-128 L. Distributed only upon authorization of BUSHIPS.

PROP, Background

Contractor, D., "CONCEPTUAL DESIGN STUDIES OF WATER JET PROPULSION SYSTEMS FOR CAB VEHICLES", Report No. 656-1, September 1966. Hydronautics, Inc. Pindell School Road, Laurel, Md.

PROP, Background

Contractor, D.N. and Johnson, V.E., "WATER JET PROPULSION", Paper No. 67-361, presented at AIAA/SNAME Advanced Marine Vehicles Meeting, Norfolk, Va., May 22-24, 1967.

PROP, Background

Cryder, L.E., "NOTES ON KORT NOZZLE SYSTEM OF PROPULSION," The Planimeter, March and April, 1966,SSCD.

PROP,Background

Dickerson, M.C., "POWERING CHARACTERISTICS OBTAINED WITH VERTICAL AXIS PROPELLERS FOR LCU(A) REPRESENTED BY MODEL 4952-1", David Taylor Model Basin Report 1753-3, Feb. 1964.

Powering tests, including investigation of bollard pull capabilities, were conducted on Model 4952-1, a modified version of Model 4952. This model represented the Utility Landing Craft, Assault LCU(A) Fy 1963. The stern lines of Model 4952 were altered by dropping the chine, making a flatter bottom, and moving the propeller 2 inches inboard.

The altered stern lines resulted in a 3 percent increase in ehp at 8 knots and a 15 percent increase in shp at 6 knots. The alterations also greatly improved the bollard pull astern capabilities.

PROP,Background

Dickerson, M.C., and Ficken, N.L., "STEERING CHARACTERISTICS OF A CYCLOIDAL PROPELLER", NSRDC T&E Report No. HML 206-H-01, May 1967.

PROP,Background

Emerson, A. and Sinclair, L., "PROPELLER CAVITATION; SYSTEMATIC SERIES TESTS ON 5 AND 6 BLADED MODEL PROPELLERS," SNAME 1967, Transactions.

PROP,Background

Engel, et. al., "THE USE OF AXIAL FLOW PUMPS FOR MARINE PROPULSION," SAE Paper No. 442A (circa 1963)

PROP, Background

Ficken, N.L., "CONDITIONS FOR THE MAXIMUM EFFICIENCY OPERATION OF CYCLOIDAL PROPELLERS", SNAME, Chesapeake Section, Aptil 1966.

PROP, Background

Gawn, R.W.L., "EFFECT OF PITCH AND BLADE WIDTH ON PROPELLER PERFORMANCE", INA, 1953.

PROP, Background

Gebhardt, J.C., "OPEN WATER PROPELLER TESTS IN FOUR OPERATING MODES," presented at the North California Section of SNAME, 1967.

PROP, Background

Gokarn, R.P., "TUG PROPELLER DESIGN," SNAME, Marine Technology, April 1969.

18 References.

PROP, Background

Grant, J.W. and Altieri, D.M., "PREDICTIONS OF POWERING AND TRIM ANGLE CHARACTERISTICS FOR AN LCM-8 (ALUMINUM), REPRESENTED BY MODEL 5152 FITTED WITH WEDGE AND KORT NOZZLES," NSRDC T&E Report No. 265-H-02, November 1968.

PROP, Background

Gregory, D.L., "CORRELATION OF MODEL TESTS AND FULL-SCALE TRIALS FOR A TWIN-SCREW LCVP", January 1970, NSRDC T&E Report 199-H-o2.

"Each transmittal of the document outside the Department of Defense must have prior approval of the Head, Hydromechanics Laboratory, Naval Ship Research and Development Center."

PROP, Background

Hadler, J.B., and Hecker, R., "PERFORMANCE OF PARTIALLY SUBMERGED PROPELLERS", 7th ONR Symposium on Naval Hydrodynamics, August 1968.

PROP, Background

Hagara, S.S., "SELF - PROPELLED AND TOWING TESTS IN WAVES OF MODEL 4532 REPRESENTING A 60TON AMPHIBIOUS CARGO CARRIER IN A FULLY FLOODED CONDITION," NSRDC Report No. 1104 October, 1957. AD 144-899. Distributed only upon authorization of BUSHIPS.

PROP, Background

Harper, M.S., and Weaver, A.H., "MODEL FLOW STUDIES AROUND STERN OF U.S. NAVY FLEET TUG ATF 163, MODEL 3531," NSRDC Report # 810, January 1952. Distrubuted only upon authorization of Naval Ship Systems Command.

PROP, Background

Hecker, R. and McDonald, N.A., "BACKING CHARACTERISTICS OF SUPERCAVITATING PROPELLERS", David Taylor Model Basin Report 1604, January 1962.

Six supercavitating propellers were tested to determine their backing characteristics. The propellers tested were TMB propellers 3671A, 3767, 3769, 3770 and 3820.

The tests were performed in open water and in the TMB 24-inch variable pressure water tunnel at several cavitation indices over a range of speed coefficients.

PROP, Background

Hecker, R., "POWERING PERFORMANCE OF A VENTILATED PROPELLER," NSRDC Report 1487, June 1961. AD 259-919.

In an effort to achieve supercavitating performance at relatively low speeds, ventilation of an SC propeller was investigated. Tests were run with a two-bladed SC propeller ventilated through holes in the propeller blades.

The results of the tests show that ventilated propellers operate with a fully developed cavity at speeds too low for supercavitating operation. Powering performance was found to be dependent upon the cavitation index based on cavity pressure.

PROP, Background

Hecker, R., "OPEN-WATER TEST RESULTS OF WEEDLESS ("RULE") PROPELLERS," DTMB REPORT 1747, May 1963. AD 410-806.

This report presents the open-water test results of four similar propellers varying only in pitch ratio. The propellers are two-bladed, commercially manufactured, and designed for weedless operation.

PROP, Background

Hecker, R. and Morgan, W.B., "SCALE EFFECT STUDIES ON PARTIALLY SUBMERGED PROPELLER 4281", NSRDC, T&E Report 249-H-06, December 1968.

"Each transmittal of this document outside the Department of Defence must have prior approval of the Head, Hydromechanics Laboratory, Naval Ship Research and Development Center."

PROP, Background

Hundemer, R.W., "CAVITATION PERFORMANCE OF PROPELLER 4169 FOR THE LCVP (K)", NSRDC, Hydromechanics Lab. Report No. 142-H-02, October 1966.

Full scale tests of Michigan Dyna-Jet three-bladed propeller in the 36 inch water tunnel.

PROP, Background

Hunt, R.R., et. al., "PERFORMANCE CHARACTERISTICS OF A JET FLAP PROPELLER", NSRDC Report 2936, December 1968.

The performance characteristics of a marine propeller with a jet flap was investigated. It was found that the jet flap effectively reduced propeller blade cavitation and that for a given advance coefficient the thrust was considerably increased by using the jet flap. The propeller efficiency decreased somewhat primarily because of the power required in delivering the jet.

PROP, Background

Hunt, R.R. and Lasky, M.P., "PREDICTIONS OF POWERING AND TRIM ANGLE OF AN LCM (8)-ALUMINUM HULL, REPRESENTED BY MODEL 5152," NSRDC T&E Report No. 265-H-01, February 1968.

PROP, Background

Johnson, V.E., "WATER JET PROPULSION FOR HIGH SPEED HYDROFOIL CRAFT", Paper presented at First Annual Meeting of AIAA, Washington, D.C., June 29-July 2, 1964.

PROP, Background

Kilgore, U., "PROPULSIVE COEFFICIENTS FOR JET SYSTEMS," The Planimeter 6/65, SSCD.

PROP, Background

Kilgore, U., "HYDRODYNAMIC ASPECTS OF TRACKED AMPHIBIANS", ASNEJournal, December 1969.

PROP, Background

Kopko, W., "PROPELLER INDUCED FLUCTUATION FORCES OF A PARTLY IMMERSED SES PROPELLER AS DETERMINED FROM MODEL EXPERIMENTS", T&E Report No. 255-H-01, February 1968.

"Each transmittal of this document outside the Department of Defense must have prior approval of the Head, Hydromechanics Laboratory, Naval Ship Research and Development Center."

PROP, Background

Kotik, J., "AMPHIBIOUS VEHICLE STUDIES", TRG Division, Control Data Corporation, Melville N.Y., June 1966 for ONR, Contract Nonr-4650 (00).

An attempt to improve the propulsive efficiency of tracked amphibians.

PROP, Background

Lindenmuth, W.T. and Barr, R.A., "STUDY OF THE PERFORMANCE OF A PARTIALLY SUBMERGED PROPELLER," July 1967, Technical Report 760-1 Hydronautics, Inc.

PROP, Background

Lorenz, E., "COMPARISON BETWEEN THE TWO METHODS OF MARINE PROPULSION", SSCD, The Planimeter, June 1963.

Waterjet versus conventional propeller. Results of full scale testing of 16 foot boat.

PROP, Background

Lorenz, E., "STERN DRIVE PROPELLERS AND PROPELLER CAVITATION PROBLEMS," SSCD Paper, The Planimeter, July 1963.

PROP, Background

Milam, A.B., and Morgan, W.B., "SECTION MODULI AND INCIPIENT CAVITATION DIAGRAMS FOR A NUMBER OF NACA SECTIONS," DTMB Report 1177, October 1957, AD 202-125.

The section moduli for the TMB EPH, NACA 16, 65A and 66 TBM modified sections are given in this report along with incipient cavitation curves for the NACA 16,65A,0000-1.10/1.575 section with a = 1.0 and 0.8 mean lines and the NACA 66 TMB modified section with an a= 0.8 mean line.

PROP, Background

Mitchell, A.R., "TUNNEL TYPE VESSELS," Transactions of Institution of Naval Architects, 1953.

PROP, Background

Moore, W.L., "WAKE SURVEYS BEHIND HYDROFOIL-STRUT-NACELLE CONFIGURATIONS-FOR APPLICATION TO THE AG(EH)," DTMB Report 1864, June 1964. AD 603-062

Wake surveys were conducted in the DTMB Subsonic Wind Tunnel on a model of the AG(EH) main strut-pod-foil configuration with and without a pod fairing, and on three related DTMB strut-pod-foil configurations.

This report presents the results of these wake surveys. One of the significant results is that each pod corner causes an additional stress reversal per cycle on the propeller blades, intensifying fatigue and vibration problems.

PROP, Background

Morgan, W.B., "OPTIMUM SUPERCAVITATING SECTIONS," NSRDC Report No. C-856, Aug. 1957.

PROP, Background

Morgan, W.B. and Caster, E.B., "PREDICTION OF THE AERODYNAMIC CHARACTERISTICS OF ANNULAR AIRFOILS," SNAME, Marine Technology, December 1966. AD 611-018.

PROP, Background

Munk, T. and Prohaska, C.W., "TESTS WITH INTERLOCKING AND OVERLAPPING PROPELLERS," Hydro-OG Aerodynamish Laboratorium Lyngby, Denmark, Report No. Hy 12, January 1969.

PROP, Background

Muntjewerf, J.J., "MODEL TESTS WITH NOZZLES AND STEERING NOZZLES FOR TRAWLERS", Publication No. 254, Netherlands Ship Model Basin.

PROP, Background

Ober, G.L., "CHARACTERISTIC CURVES AND BLADE MEASUREMENTS OF COMMERCIAL SMALL BOAT PROPELLER SERIES", NSRDC Report No. 956, May 1955. Distributed only upon authorization of Bureau of Ships.

PROP, Background

O'Brien, T.P., "DESIGN OF TUG PROPELLERS", NPL Ship Report 75, June 1966.

PROP, Background

Oosterveld, M.W.C., "SERIES OF MODEL TESTS ON DUCTED PROPELLERS", NSMB Report Prepared for DTMB under Contract N62558-3960, May 1965.

PROP, Background

Oosterveld, M.W.C., (NSMB), "MODEL TESTS WITH DECELERATING NOZZLES," Paper presented at ASME Florida Engineering Conference Symposium on Pumping Machinery for Marine Propulsion, May 1968, Philadelphia; Also in ISP, Issue unknown.

This paper presents the results of open-water tests and observation of the cavitation characteristics of systematic series of flow decelerating nozzels (or pumpjets). The tested nozzle shapes have been derived theoretically. The results of these theoretical calculations and of the experiments are presented in a nondimensional form in graphs. A discussion of the results is given.

PROP, Background

Peach, R.W., "A METHOD FOR DETERMINING ACCELERATIONS OF A SHIP", ISP Vol. 10 No. 106, June 1963.

PROP, Background

Peck, J.G., "CHARACTERISTIC CURVES OF THREE SMALL BOAT PROPELLERS WITH SYSTEMATIC DIAMETER REDUCTIONS", NSRDC Report No. 1217, Feb. 1958, AD-202-123. Distributed only upon authorization of BUSHIPS.

PROP, Background

Ruys, A.W., "A COMPARISON OF SOME PUBLISHED RESULTS OF TESTS ON VERTICAL AXIS PROPELLERS", ISP Vol. 13 No. 148, December 1966.

PROP, Background

Schab, H.W., "WATER JETS MAKE LESS NOISE," ASNE Journal, February 1964.

PROP, Background

Schuster, S., et al., "ON CERTAIN PROBLEMS OF WATER JET PROPULSION (UBER PROBLEME DES WASSERSTRAHLANTRIEBS)", Jahrb. STG, Vol. 54, 1960, DTMB Translation No. 306, August, 1962 by E.N. Labouvie, Ph.D.

PROP, Background

Sherman, P.M. and Lincoln, F.W., "RAM INLET SYSTEMS FOR WATERJET PROPULSORS," AIAA Paper No. 69-418, May 1969.

Ram inlets applicable to high speed (up to 100 knots) waterjet propelled ships are analyzed and shown to present exacting design requirements. Based on the analytical results, variable geometry appears to be a necessity to achieve the thrust capability for acceleration to design speed. The selection of the design inlet velocity ratio is shown to be very critical, making it necessary to adhere to the optimum value or suffer high power losses. At 100 knot speeds, base vented inlets appear definitely superior, with respect to drag over both subcavitating and supercavitating types. Methods are presented for selecting the optimum waterjet inlet system based on tradeoffs between external and internal performance losses. Cavitation free designs are generated and analyzed with the aid of the Neumann Problem solution. Accounting and calculation procedures for external drag and internal losses are established and applied to the inlet system of a 100 knot surface effect ship.

PROP, Background

Shields, C.E., "PERFORMANCE CHARACTERISTICS OF SEVERAL PARTIALLY SUBMERGED SUPERCAVITATING PROPELLERS," NSRDC Report 2723, July 1968. AD 840-701.

Experimental studies were conducted on four propellers in the partially submerged condition. Three were existing NSRDC supercavitating propellers, and one was an eight-bladed propeller specifically designed for partially submerged operation. Experimental results show that the thrust and torque are proportional to the submergence, and that efficiency is essentially independent of the submergence. Also, Froude effects are important for certain speed regimes.

PROP, Background

Shields, C.E., "OPEN WATER PROPELLER PERFORMANCE IN INCLINED FLOW," NSRDC, Hydromechanics Laboratory Report No. 110-H-01, November 1965.

PROP, Background

Shields, C.E., "PERFORMANCE CHARACTERISTICS OF SEVERAL PARTIALLY-SUBMERGED SUPERCAVITATING PROPELLERS", NSRDC T&E Report No. 249-H-OT.

"Each transmittal of this document outside the Department of Defense must have prior approval of the Head, Hydromechanics Laboratory, Naval Ship Research and Development Center."

PROP, Background

Taniguchi, et al, "INVESTIGATION INTO THE PROPELLER CAVITATION IN OBLIQUE FLOW," Report No. 1800, May 1964, Experimental Tank (Nagasaki) Laboratory, Mitsubishi Shipbuilding and Engineering Co. Ltd., Prepared under ONR Contract Nonr-4214(00)

PROP, Background

Taniguchi, K., et al, "INVESTIGATION OF THE PROPELLER CAVITATION IN OBLIQUE FLOW 2ND REPORT," Mitsubishi Heavy Industries Ltd., Experimental Tank (Nagasaki), Report No. 2221, May 1966, Prepared under ONR Contract NONR 5002(00), NR 062-308/7-28-64.

PROP,Background

Traksel, J. and Beck, W.E., "WATERJET PROPULSION FOR MARINE VEHICLES," AIAA Paper No. 65-245.

PROP, Background

Van Gunsteren, L.A., "REDUCTION OF BLADE SPINDLE TORQUE BY VENTILATION", Paper presented at the exibition "Inrybprom",Leningrad, USSR, 19 August 1968.

PROP, Background

Van Manen, J.D., "EFFECT OF RADIAL LOADS DISTRIBUTION ON THE PERFORMANCE OF SHROUDED PROPELLERS". ISP, Vol. 9, No. 93, May 1962, also RINA Paper, Spring 1962.

PROP, Background

VanManen, J.D., "RESULTS OF SYSTEMATIC TESTS WITH VERTICAL AXIS PROPELLERS", Pub. No.235b of Netherland Ship Model Basin, ISP Vol. 13 No. 148, December 1966.

PROP, Background

Venning, E. Jr., and Haberman, W.L., "SUPERCAVITATING PROPELLER PERFORMANCE," SNAME 1962.

PROP, Background

West, E.E. and Crook, L.B., "A VELOCITY SURVEY AND WAKE ANALYSIS FOR AN ASSAULT SUPPORT PATROL BOAT (ASPB) REPRESENTED BY MODEL 5014," NSRDC T&E Report No. 149-H-05, September 1967.

PROP, Background

Wilson, W.E., "SQUEEGEE PUMP PERFORMANCE," Product Engineering, September 2, 1963.

PROP, Background

Witte, J.H., "PREDICTED PERFORMANCE OF LARGE WATER RAMJETS," AIAA Paper No. 69-406.

The water ramjet is a low weight contender for propelling the high speed Surface Effect Ships of the future. This propulsor which has no moving parts in contact with the water phase consists of a simple contoured duct. Compressed air is injected at a high pressure region in the duct, generating a two phase flow. The expanding gas phase accelerates the flow through a nozzle, thus producing forward thrust. The flow is described using the Euler and Rayleigh equations, the equation of movement of the bubbles relative to the water phase and the first law of thermodynamics. These equations are used in a computer program for predicting thrust and propulsive efficiency. The effects of scale, forward speed, compression cycle and nozzle length on propulsive efficiency is discussed and tabulated. The basic data and nozzle shape of a water ramjet which generates 40 tons thrust at 80 knots are given and a conceptual design is discussed. Propulsive efficiency is of the order of 50-60%.

PROP.Background

Wood, J., "THE EFFECT OF PROPULSION UNIT ON THE ACCELERATION OF TUGS", Ship and Boat International, March 1969.

PROP, Background

Anonymous, "DESIGN STUDY OF WATER JET PROPULSION SYSTEMS FOR SHALLOW DRAFT BOATS", Hydronautics, Inc. Report 516-1 , April 1965.

PROP,

Delao, M., "SOME EXPERIMENTAL RESULTS OF TESTS OF A LOW-SPEED, WATERJET PROPULSION SYSTEM", AIAA Paper No. 66-718.

PROP,

Gongwer, C.A., "WATER JET PROPULSION FOR SURFACE CRAFT," Aerojet-General Corp., Azuza, Calif.

PROP,

Mamontov, Iu. N., "DIAGRAMS FOR EVALUATING THE EFFECT OF NOZZLES ON PROPELLER PERFORMANCE (DIAGRAMMY DLA OPREDELENIA EFFEKTIVNOSTI USTANOVKI NAPRAVLAIUSHCHIKH NASADOK I RASCHETA GREBNYKH VINTOV)", Sudostroenie, No. 8, August 1959, DTMB Translation No. 301 by B.V. Nakonechny, AD 249-440.

PROP,

Miniovich, I. YA., "INVESTIGATION OF HYDRODYNAMIC CHARACTERISTICS OF SCREW PROPELLERS UNDER CONDITIONS OF REVERSING AND CALCULATION METHODS FOR BACKING OF SHIPS," BuShips Translation 697, U.S. Government Printing Office.

PROP,

O'Brien, T.P., "SOME EFFECTS OF VARIATION IN BLADE AREA, BLADE OUTLINE, AND BOSS DIAMETER ON MODEL SCREW PERFORMANCE", NECI Transactions, Vol 84, April 8, 1968.

PROP,

Oosterveld, M.W.C., "SERIES OF MODEL TESTS ON DUCTED PROPELLERS", Final Report No. 67-163-AH, November, 1967. Netherlands Ship Model Basin, Wageningen. Prepared under ONR Contract, GHR Program Distribution to foreign nationals or governments only by prior approval of NSRDC, Washington, D.C. 20034.

PROP,

Solovev, V.I. and Chumak, D.A., "EXPERIMENTAL INVESTIGATIONS OF PROPELLERS IN NOZZLES AT THE CENTRAL AERO-HYDRODYNAMIC INSTITUTE (MOSCOW)", Korabelnye Dvizhiteli, 1948, DTMB Translation No. 302 by B.V. Nakonechny, March 1961, AD 252-787.

PROP,

Venning, E. Jr., "APPLICABILITY OF A SUPERCAVITATING PROPELLER TO A SMALL SPEEDBOAT". NSRDC Report No. 1459, November, 1960, AD 250-364.

PROP,

Verhagen, J., "METHOD TO CALCULATE THE OPTIMUM DIAMETER OF MARINE PROPELLERS", ISP Vol. 13 No. 145, September 1966.

PROP,

Volker, "UNIVERSAL PROPELLER CHARTS FOR SHIP DESIGN", ISP (Date Unknown)

PROP,

Folger, L., et al, "FREE-STREAM CHARACTERISTICS OF A FAMILY OF LOW-ASPECT-RATIO, ALL-MOVABLE CONTROL SURFACES FOR APPLICATION TO SHIP DESIGN", NSRDC Report No. 933, December 1958, AD-202-514.

STEER, Useful

Hall, D., "RUDDER DESIGN FOR PLANING CRAFT," SSCD Paper, The Planimeter, October, November, 1962.

STEER, Useful

Jaeger, H.E., Tech. Univ. of Delft (Netherlands), "APPROXIMATE CALCULATIONS OF RUDDER TORQUE AND RUDDER PRESSURES", Paper read at Association Technique Maritime et Aeronautique in Paris, May 1952, also in ISP, issue unknown.

STEER, Useful

Sugai, K., "ON THE MANEUVERABILITY OF THE HIGH SPEED BOAT," Bureau of Ships Translation 868, AD 463211, , Also U. of Michigan Translation by J.L. Moss and T. Murakami.

STEER, Useful

Wagner, W., "HYDRAULIC STEERING GEARS", The Planimeter, February 3, 1967, SSCD.

STEER, Useful

Curry, J.H., "REPORT ON RUDDER TORQUE OBTAINED FROM TESTS OF EX-PT8 MOTOR TORPEDO BOAT," DTMB Report No. C-301, April 1950.

STEER, Background

Davidson K.S.M., "A NOTE ON THE STEERING OF SHIPS IN FOLLOWING SEAS," Davidson Lab. Note 80, June 1948.

STEER, Background

DuCane, P., "MODEL EVALUATION OF FOUR HIGH SPEED HULL FORMS IN FOLLOWING AND HEAD SEA CONDITIONS," Paper presented at Symposium on the Behavior of Ships in a Seaway, Sept. 1957.

STEER, Background

Fischer, K., "CALCULATION OF RUDDER FORCE", Translation No. 52, Nov.1938 USEMB (DTMB) by M.C. Roemer.

STEER, Background

Gordon, S.J. and Tarpgaard, P.T., "UTILIZATION OF PROPELLER SHROUDS AS STEERING DEVICES," SNAME, Marine Technology, July 1968.

Interesting use of semi-circular shroud to replace rudder in MIT experimental work. Contains theoretical work and test data.

STEER, Background

Gray, F.C., "STEERING GEARS," Article in Technical Yachting, Yachting Publishing Co, New York, 1961.

STEER, Background

Grenfell, T., "SOME NOTES ON STEERING OF HIGH SPEED PLANING HULLS," SNAME, Pacific Northwest Section, 27 September 1952. Abstracted in SNAME Members Bulletin, January 1953.

STEER, Background

Grim, O., "SURGING MOTION AND BROACHING TENDENCIES IN A SEVERE IRREGULAR SEA," Davidson Lab. Report 929, November 1962.

STEER, Background

Hawkins, S., "THE SELECTION OF MANEUVERING DEVICES," Chesapeake Section, SNAME, September 1965.

STEER, Background

Hoerner, S.F., "THE HYDRODYNAMIC TORQUE OF SHIP RUDDERS", 2nd Ship Control System Symposium Naval Ship Research and Development Laboratory, Annapolis, Md. 21402 Nov. 1969. Each transmittal of this document outside of agencies of the United States, Canadian, or United Kingdom governments must have the prior approval of the Commanding Officer, Naval Ship Research and Development Laboratory, Annapolis, Maryland.

STEER, Background

Kafali, K., "INVESTIGATION OF THE CHARACTERISTICS OF SINGLE SCREW PROPELLERS WITH TWIN RUDDERS PLACED SYMMETRICALLY IN THE PROPELLER RACE," ISP, July 1959.

STEER, Background

Kafali, K, "INTERACTION BETWEEN SINGLE SCREW PROPELLERS AND TWIN RUDDERS PLACED SYMMETRICALLY IN THE SCREW RACE," ASNE, 1959.

STEER, Background

Leibowitz, R.C., and Strandhagen, A.G., "THEORY OF STATIC AND DYNAMIC LOADS ON A RUDDER IN A STEADY TURN," DTMB Report 1647, February 1963.

A rapid approximate procedure is given for predicting the static and dynamic loads on a rudder of a surface ship or submarine in a steady horizontal turn as a function of the rudder angle of attack.

STEER, Background

Locke, F.W.S., "INFORMAL TESTS OF THE WATER HANDLING CHARACTERISTICS OF THE GOODYEAR XGA2PT PLANING TAIL FLYING BOAT," BuAer Report 1151.

STEER,Background

Sobolev, G.V., "CALCULATIONS OF MANEUVERABILITY OF FAST SURFACE SHIPS", Translated by Michail Aleksandrov and Peter Fitzgerald, University of Michigan, Dept. NA&ME, No. 060, February 1970.

STEER, Background

Taggart, R., "NEW CONCEPT IN SHIP RUDDER DESIGN," Ocean Industry Magazine, Jan. 1970.

STEER, Background

Tsakonas, S., et. al., "A THEORY FOR THE PROPELLER-RUDDER INTERACTION," Report SIT-DL-68-1284, August 1968.

STEER, Background

Unknown, "ROTATABLE SHROUDS" AND "GENERAL INFORMATION ON THRUSTERS", NIC Translation No. 2878, 25 August 1969. Naval Intelligence Command Headquarters, Translation Division, Washington, D.C. 20350.

STEERING, Background

Arabian, D., "HYDRODYNAMIC DIRECTIONAL STABILITY OF A SWEPT PLANING TAIL HULL", NACA RM L51 F04.

STEER,

DuCane, P. and Goodrich, G.J., "THE FOLLOWING SEA, BROACHING AND SURGING", Transaction, INA, 1961.

STEER,

Hagem, G.R., "EFFECTS OF VARIATIONS IN THICKNESS / CHORD RATIO OF RUDDERS IN A SLIP-STREAM", NSRDC Report No. C-487, January 1952.

STEER,

Sadler, W.C., "APPARENT SLIP AND TACTICAL DIAMETERS FROM TRIALS OF A GERMAN "E" BOAT", NSRDC Report No. 628, January, 1948.

STEER,

Thieme, H., "DESIGN OF SHIP RUDDERS", DTMB Translation 321, November 1965.

STEER,

Lewis, E.V., "THE MOTION OF SHIPS IN WAVES," Chapter 9 of PRINCIPLES OF NAVAL ARCHITECTURE, SNAME, New York, N.Y., 1967.

MOTIONS, Essential

Fridsma, G., "A SYSTEMATIC STUDY OF THE ROUGH WATER PERFORMANCE OF PLANING BOATS," Davidson Laboratory, Stevens Institute of Technology, R-1275. November 1969.

MOTIONS, Useful

Fridsma, G., "A SYSTEMATIC STUDY OF THE ROUGH WATER PERFORMANCE OF PLANING BOATS, PHASE II, IRREGULAR SEAS," Davidson Laboratory Report 1495, February 1971.

MOTIONS, Useful

Marks, W., "THE APPLICATION OF SPECTRAL ANALYSIS AND STATISTICS TO SEAKEEPING", SNAME, T & R Bulletin No. 1 - 24.

MOTIONS, Useful

McGown, S.C., "THE SEAWORTHINESS PROBLEM IN HIGH SPEED SMALL CRAFT," SNAME, New York Metropolitian Section, January 24, 1961.

MOTIONS, Useful

Moskowitz, L. et. al. "WAVE SPECTRA ESTIMATED FROM WAVE RECORDS OBTAINED BY OWS WEATHER EXPLORER AND OWS WEATHER REPORTER," New York University, College of Engineering Research Division, 1962, 1963.

MOTIONS, Useful

Roper, J., "ENGINEERING APPROXIMATION OF MAXIMUM ACCELERATIONS EXPERIENCED BY PLANING CRAFT DURING ROUGH WATER OPERATION", Davidson Laboratory, Stevens Institute of Technology, Report No. R-1437, December, 1969.

MOTIONS, Useful

Savitsky, D., "ON THE SEAKEEPING OF PLANING HULLS," SNAME, Marine Technology, April 1968.

MOTIONS, Useful

Altman, R., "THE STEADY STATE AND OSCILLATORY HYDRODYNAMICS OF A 20^{o} DEADRISE PLANING SURFACE," Hydronautics, Inc., Laurel Md., August 1968.

Motions,Background

Baitis, A.E., "THE RELATIVE PERFORMANCE OF THREE ALTERNATIVE HULL DESIGNS OF ATC/CCB IN WAVES," NSRDC Hydro Lab Report 334-H-02, May 1969.

"Each transmittal of this document outside the Department of Defense must have prior approval of the Head, Hydromechanics Lab, NSRDC."

MOTIONS,Background

Balitskaja, E.O., "RESULTS OF EXPERIMENTAL INVESTIGATION FOR CAPSIZING IN BREAKING WAVES", Translated by Michail Aleksandrov and Geoffrey Gardner, University of Michigan, Dept. of NA & ME, No. 048, March 1970.

MOTIONS, Background

Bascom W., "OCEAN WAVES," Scientific American, August 1959.

MOTIONS, Background

Benen, L., "ROUGH WATER TESTS OF MODEL 4943 REPRESENTING A 41-FOOT PERSONNEL BOAT," DTMB Report 1833, May 1964. AD 601-571.

Tests of TMB Model 4943 were conducted in Langley Tank No. 1 to determine the motions and resistance of a round bilge 41-ft. Personnel Boat in waves. Model pitch, heave, and accelerations at bow and CG were measured on a 1/6-scale model in head seas in regular waves.

The hull responses to regular waves were obtained experimentally, and the method of linear superposition was applied to characterize the craft's behavior in a State 3 sea.

MOTIONS,Background

Benson, J.M. and Lindsay, J.L., "THE EFFECT OF DEADRISE UPON THE LOW-ANGLE TYPE OF PORPOISING", NACA Wartime Report N 62 65610 ARR, October 1942, (Advance restricted Report) L-610.

MOTIONS, Background

Davidson K.S.M. and Locke, F.W.S., Jr., "SOME SYSTEMATIC MODEL EXPERIMENTS ON THE PORPOISING CHARACTERISTICS OF FLYING BOAT HULLS," NACA ARR, June 1943.

MOTIONS, Background

Gersten, A., "EFFECT OF METACENTRIC HEIGHT ON ROLL DAMPING", NSRDC Report 2982, Oct. 1969.
Experiments have been conducted by the Naval Ship Research and Development Center on a floating circular cylinder to determine the effect on roll damping of changes in transverse metacentric height GM. The relationship between log decrement δ and GM is defined, both graphically and by means of an empirical equation which shows that δ varies inversely as the square root of GM. In addition, the total energy lost per cycle and the energy losses due to wavemaking are discussed.

MOTIONS, Background

Gersten, A., "ROLL DAMPING OF CIRCULAR CYLINDERS WITH AND WITHOUT APPENDAGES", NSRDC Report 2621, October 1969.

MOTIONS, Background

Hopkins, R.M., "IMPLEMENTATION OF RANDOM WAVES FOR SHIP TOWING TESTS," SNAME, Southern California Section Paper.

MOTIONS, Background

Hsu, C.C., "ON THE MOTIONS OF HIGH SPEED PLANING CRAFT," Hydronautics, Inc. Technical Report 603-1, AD 658151, DDC.

MOTIONS, Background

Kent, J.L., SHIPS IN ROUGH WATER, Thomas Nelson and Sons, (1958).

MOTIONS, Background

Leshnover, S., "A STUDY OF THE EFFECTS OF DEADRISE DISTRIBUTION AND BUTTOCK CURVATURE ON THE DIVING TENDENCY OF FLYING BOAT FOREBODIES DURING LANDING," E.T.T. Report 419, Feb. 1953.

MOTIONS, Background

Locke, F.W.S., Jr., "GENERAL PORPOISING TESTS OF FLYING BOAT HULL MODELS", NACA ARR, September 1943.

MOTIONS, Background

Lueders, D.H. and Fridsma, G., "ROUGH WATER TESTS OF A 1/16-SCALE HIGH SPEED LCM," Davidson Laboratory Report No. 751, May 1959.

MOTIONS,Background

Lueders, D., "MODEL TESTS OF TWO PLANING FORMS AND A ROUND BOTTOM FORM IN AN IRREGULAR HEAD SEA," Davidson laboratory Report 746, April 1959.

MOTIONS, Background

Milwitsky, B., "A GENERALIZED THEORETICAL INVESTIGATION OF THE HYDRODYNAMIC PITCHING MOMENTS EXPERIENCED BY V-BOTTOM SEAPLANES DURING STEP-LANDING IMPACTS AND COMPARISONS WITH EXPERIMENT", NACA TN 1630, June 1948.

MOTIONS, Background

Moody, C.G., "THE EFFECT OF BEAM ON THE SEAWORTHINESS OF ESCORT PATROL CRAFT", DTMB Report C-644, September 1954.

MOTIONS, Background

Mottard, E.J., "INVESTIGATION OF SELF-EXCITED PLANING VIBRATION AT LARGE WETTED ASPECT RATIO," NSRDC Report No. 2017, November 1965, AD 625-339.

MOTIONS, Background

Numata, E., "MODEL TESTS OF PROPOSED 160-FOOT PATROL VESSEL IN WAVES," Davidson Laboratory Report No. 753, June 1959.

MOTIONS, Background

Numata, E. and Lewis, E.V., "AN EXPERIMENTAL STUDY OF THE EFFECT OF EXTREME VARIATIONS IN PROPORTIONS AND FORM ON SHIP MODEL BEHAVIOR IN WAVES", ETT Report No. 643, Dec. 1957, Stevens Institute of Technology.

MOTIONS, Background

Perring, W.G.A., "PORPOISING OF HIGH SPEED MOTOR BOATS," INA, 1933, Vol. 75, pp. 268-296.

MOTIONS, Background

Perring, W.G.A. and Glauert, H., "STABILITY ON THE WATER OF A SEAPLANE IN THE PLANING CONDITION," ARC R&M No. 1493, September 1932. Aero. Res. Committee, TR Vol. 42, September 1933, His Majesty's Stationary Office, London.

MOTIONS, Background

Pierson, W.J., et al, "PRACTICAL METHODS FOR OBSERVING AND FORECASTING OCEAN WAVES BY MEANS OF WAVE SPECTRA AND STATISTICS," U.S. Hydrographic Office Publication 603, 1955.

MOTIONS, Background

Pierson, W.J., Jr., and Marks, W., "THE POWER SPECTRUM ANALYSIS OF OCEAN WAVE RECORDS," Trans. AGU Vol. 33, 1952, p. 834.

MOTIONS, Background

Pradko and Lee, "VIBRATION COMFORT CRITERIA," U.S. Army Tank-Automotive Center, Detroit Systems Simulation Branch.

MOTIONS, Background

Ridland, D.M., et al, "AN INVESTIGATION OF THE HYDRODYNAMIC STABILITY AND SPRAY CHARACTERISTICS OF HIGH LENGTH/BEAM RATIO SEAPLANE HULLS WITH HIGH BEAM LOADINGS," Aeronautical Research Council London, H M Stationery Office, 1959.

MOTIONS, Background

DIMENSIONS OF SEAWAVES AS FUNCTIONS OF WIND FORCE," SNAME T&R Bulletin No. [illegible]
Translation by Manley St. Denis.

MOTIONS, Background

St. Denis, M. and Pierson W.J., Jr., "ON THE MOTIONS OF SHIPS IN CONFUSED SEAS," SNAME Transactions, 1955.

MOTIONS, Background

Savitsky, D., "HIGH SPEED TESTS IN WAVES AT DAVIDSON LABORATORY, STEVENS INSTITUTE OF TECHNOLOGY", Davidson Laboratory, August 1969.

MOTIONS, Background

Sottorf, W., "SYSTEMATIC MODEL RESEARCHES ON THE STABILITY LIMITS OF THE DVL SERIES OF FLOAT DESIGNS," NACA TM 1254, December 1949.

MOTIONS, Background

Vossers, G., "FUNDAMENTALS OF BEHAVIOR OF SHIPS IN WAVES", International Shipbuilding Progress Vol. 9, April 1962.

MOTIONS, Background

Whitaker, W.E.JR. and Bryce P.W.JR., "EFFECT OF AN INCREASE IN ANGLE OF DEAD RISE ON THE HYDRODYNAMIC CHARACTERISTICS OF A HIGH-LENGTH-BEAM-RATIO HULL", NACA TN 2297, February 1951.

An investigation was made in Langley tank No. 1 to determine the effects of increasing the angle of dead rise on the hydrodynamic performance of a flying-boat hull having a length-beam ratio of 15. The hydrodynamic qualities determined were longitudinal stability during take-off and landing, spray characteristics, and take-off performance in smooth water and landing behavior in waves. The results of this investigation indicate an over-all improvement in the hydrodynamic characteristics including a large reduction in the accelerations and motions in waves.

MOTIONS,Background

Ogilvie, T.F., "INSTABILITY OF PLANING SURFACES," University of Michigan, July 1959.

MOTIONS,

Heller, S.R. Jr. and Jasper, N.H., "ON THE STRUCTURAL DESIGN OF PLANING CRAFT," Quarterly Transactions of the Royal Institution of Naval Architects, July 1960.

The "Bible" for determination of bottom design pressures in planing craft.

LOADS, Useful

Lankford, B.W., "THE STRUCTURAL DESIGN OF THE ASR CATAMARAN CROSS-STRUCTURE", ASNE, JOURNAL August 1967, See Also ASNE Journal, October 1967 "Errata to ASR Catamaran Cross-Structures'.

Statistical techniques applied to ship strength calculations Good paper on wave loading.

LOADS, Useful

Aertssen, G., "THE ALLOWABLE LIMITS OF SHIP VIBRATIONS", ISP, Vol. 10, No. 108, August 1963.

LOADS, Background

Anonymous, "EXPERIMENTS WITH FULL SIZE MACHINES, 3RD SERIES, P-5 FLYING BOAT N 86 IMPACT TESTS", National Tank Staff, Advisory Council for Aeronautics, Areonautical Research Committee, Reports and Memoranda No. 926, April 1924.

LOADS, Background

Anonymous, "MILITARY VEHICLE GROUND LOADING STUDY," Gibbs and Cox, June 1967.

LOADS, Background

Anonymous, "FAST PATROL BOATS, DYNAMIC FORCES ON THE HULL," Report No. 1, Trials of MTB 1024, Admiralty Experiment Works, Report Number 20/56, Haslar.

LOADS, Background

Anonymous, "FAST PATROL BOATS, DYNAMIC FORCES ON THE HULL", Report No. 2, Calm Water Trials of BOLD PIONEER, Admiralty Experiment Works.

LOADS, Background

Archer, S., 'PROPELLER-EXCITED VIBRATION; FIVE BLADES OR FOUR?", ISP Vol 9 No. 91, March 1962.

LOADS, Background

Batterson, S.A., "THE NACA IMPACT BASIN AND WATER LANDING TESTS OF A FLOAT MODEL AT VARIOUS VELOCITIES AND WEIGHTS," NACA Report 795 (1944).

LOADS, Background

Benscotter, S.U., "IMPACT THEORY OF SEAPLANE LANDING," NACA Tech. Note No. 1437, October 1947.

LOADS,Background

Berg, S.F., "SOME CONTRIBUTIONS TO THE WEDGE-WATER ENTRY PROBLEM", Journal of Engineering Mechanics Division, ASCE, 83, EM 2, April 1957.

LOADS,Background

Bisplinghoff, R.L. and Dougherty, C.S., "A TWO-DIMENSIONAL STUDY OF THE IMPACT OF WEDGES ON A WATER SURFACE," Cont. NOa(s)-9921, Dept. of Areo. Engineering, MIT, 20 March 1950.

LOADS, Background

Borg, S.F., "INITIAL WEDGE IMPACT ON A COMPRESSIBLE FLUID," J. Appl. Ph., 30, Sept. 1959.

LOADS,Background

Borg, S.F., "BLUNT NOSED WEDGE WATER ENTRY", ETT, TM-468, (1958).

LOADS, Background

Borg, S.F., "THREE-DIMENSIONAL WEDGE IMPACT ON A COMPRESSIBLE FLUID," J. Appl. Ph., 31, pp. 438-439, (1960).

LOADS, Background

Bottomley, M., "THE IMPACT OF A MODEL SEAPLANE FLOAT ON WATER 18TH SERIES," Advisory Committee for Aeronautics (England) Aeronautical Research Committee Reports and Memoranda No. 583, March 1919.

LOADS, Background

Breslin, J.P., "ESTIMATION OF PROPELLER-INDUCED BLADE FREQUENCY PRESSURES AND FORCES ON SIMPLE BOUNDARIES AND SHIPS", Naval Engineers Journal, August 1966.

LOADS, Background

Chey, Y.H., "HULL-WAVE IMPACT LOAD ON HIGH-SPEED MARINE CRAFT", Davidson Laboratory Report 1072, May 1965, AD 469-862, Bureau of Naval Weapons, Contract N600 (19) 58353 (DL Project 2607/371).

A theoretical method for estimation of the bow-impact force of high-speed marine craft on regular waves is presented, based on the strip theory and the concept of virtual mass. Numerical results are obtained for two models, one with constant deadrise and the other with varying deadrise. Experimental studies on impact lift, drag, pitch moment, and phase angle are reported, for the same models under various wave conditions. The theoretical results for impact lift are found to be in good agreement with measurements, except in the case of very high and steep waves.

LOADS, Background

Chuang, S.L., "EXPERIMENTAL INVESTIGATION OF RIGID FLAT-BOTTOM BODY SLAMMING", DTMB Report 2041, September 1965, AD 622-427. Also JSR, March, 1966.

LOADS, Background

Chuang, S.L., "SLAMMING OF RIGID WEDGE-SHAPED BODIES WITH VARIOUS DEADRISE ANGLE," DTMB Report 2268, October 1966. AD 643-235.

LOADS, Background

Chuang, S., "IMPACT PRESSURE DISTRIBUTIONS ON WEDGE-SHAPED HULL BOTTOMS OF HIGH SPEED CRAFT," NSRDC R-2953, August 1969.

LOADS, Background

Dobrovol'skaya, Z.N., "PENETRATION OF A WEDGE INTO A COMPRESSIBLE HALF-SPACE," PMM 25, No. 3, pp. 485-489, (1961).

LOADS, Background

Dobrovol'skaya, Z.N., "ON THE NATURE OF THE CONTACT BETWEEN THE FREE SURFACE OF A LIQUID AND THE SOLID BOUNDARY IN THE PROBLEM OF WEDGE PENETRATION," Soviet Physics-Doklady, 8, 12, PP. 1179-1181, June 1964.

LOADS, Background

Edge, P.M., "HYDRODYNAMIC IMPACT LOADS IN SMOOTH WATER FOR A PRISMATIC FLOAT HAVING AN ANGLE OF DEAD RISE OF 10 DEGREES", NACA TN 3608, (1956).

LOADS,Background

Edge, P.M., "IMPACT LOADS INVESTIGATION OF CHINE-IMMERSED MODEL HAVING A CIRCULAR-ARC TRANSVERSE SHAPE," NACA TN 4103 (1957).

LOADS, Background

Edge, P.M., "IMPACT-LOADS INVESTIGATION OF CHINE-IMMERSED MODELS HAVING CONCAVE-CONVEX TRANSVERSE SHAPE AND STRAIGHT OR CURVED KEEL LINES," NACA TN 3940 (1957).

LOADS,Background

Edge, P.M., "HYDRODYNAMIC IMPACT LOADS OF A 20-DEGREE DEADRISE INVERTED-V MODEL AND COMPARISONS WITH LOADS OF A FLAT-BOTTOM MODEL", NACA TN 4339 (1958).

LOADS, Background

Feit, D. et al, "IMPACT OF AN ELASTIC WEDGE ON A COMPRESSIBLE FLUID," Columbia University November 1964.

LOADS, Background

Ferdinande, "THEORETICAL CONSIDERATIONS ON THE PENETRATION OF A WEDGE INTO THE WATER," ISP, 13 No. 140, April 1966.

LOADS, Background

Garabedian, P.R., "OBLIQUE WATER ENERGY OF A WEDGE," Stanford University Report, July 1952. (also, Communications in Pure Appl. Mech,. 6, 1953).

LOADS, Background

Grigoryan, S.S., "ON THE WORK OF Z.N. DOBROVOL'SKAYA, 'PENETRATION OF A WEDGE INTO A COMPRESSIBLE HALF-SPACE,'" PMM, 26 pp. 557-558, (1962).

LOADS, Background

Hagen, A., "VIBRATION TRIALS ON ALUMINUM AND STEEL LANDING CRAFT-LCM (8)", Naval Ship R&D Center Report 2756, March 1968.

Underway vibration trials of LCM(8) landing craft were conducted to evaluate basically similar designs in steel and aluminum. Vibration measurements were made on engine and gearbox foundations, hull girder structure, and local structural areas. Generally, vibration levels of the three-bladed aluminum boat were lower than those of steel boat. The effect of substituting four-bladed propellers and removing a set of skeg struts from the aluminum boat was insufficient to justify these modifications.

LOADS, Background

Hedrick, I.G. and Siebert E.G., "WATER LOADS INVESTIGATION - AIRPLANE MODEL XJR2F-1," Report No 2903.41, Grumman Aircraft Engineering Corp. May 19, 1946

LOADS, Background

Hirsch, A.E., "FULL SCALE SLAMMING TESTS ON LANDING CRAFT LCP-L MK 4", DTMB Report 1481, AD 259-095, 1961.

LOADS, Background

Jasper, N.H., "DYNAMIC LOADING OF A MOTOR TORPEDO BOAT (YP 110) DURING HIGH SPEED OPERATION IN ROUGH WATER", NSRDC Report No. C - 175, September 1949.

LOADS, Background

Jasper, N.H., "MEASUREMENT OF HYDRODYNAMIC LOADS ON A HIGH-SPEED MOTOR BOAT CAUSED BY WAVE IMPACT DURING ROUGH-WATER TRIALS," Proceedings, Society for Experimental Stress Analysis, 8, No. 2, (1951).

LOADS, Background

Jensen, W.R., "HYDROFOIL BOAT HULL-WAVE IMPACT LOADS", ASME Paper 60-WA-326, (1961), Grumman Aircraft Engineering Corporation Report No. GE-173, August 15, 1959.

LOADS, Background

Jones, E.T. and Davies, W.H., "WATER PRESSURE ON HULL OF BOAT SEAPLANE," R&M 1638, ARC, (1934-35).

LOADS, Background

Jones, E.T., et al, "MEASUREMENTS OF ACCELERATION AND WATER PRESSURE ON A SEAPLANE WHEN DROPPED INTO WATER," Reports and Memoranda, No 1807, ARC, January 1937, (MAEE Report, November 1936).

LOADS,Background

Jones, E.T. and Blundell, R.W., "FORCE AND PRESSURE MEASUREMENTS ON V-SHAPES ON IMPACT WITH WATER COMPARED WITH THEORY AND SEAPLANE ALIGHTING RESULTS", R&M No.1932, ARC, 1938.

LOADS, Background

Kaplan, L. "A SURVEY ON HYDRO-SKI WATER LOADS," EDO Corporation Report No. 4439, November, 1957.

LOADS, Background

Kapryan, W.J. and Boyd, G.M. Jr., "HYDRODYNAMIC PRESSURE DISTRIBUTIONS OBTAINED DURING A PLANING INVESTIGATION OF FIVE RELATED PRISMATIC SURFACES", NACA TN 3477, September 1955.

Hydrodynamic pressure distributions have been obtained during pure planing for five related prismatic surfaces. The distributions gave integrated lifts that in almost every case were well within 10 percent of the applied load. Comparison of experiment with theory shows that existing theories will adequately predict flat-plate pressures. For the V-shaped surfaces, experiment and theory are in poor agreement. The lift and center-of-pressure data for both the flat and V-shaped surfaces are in good agreement with recent experimental and theoretical NACA research on planing surfaces.

LOADS, Background

Karzas, W.J., "THE VERTICAL WATER ENTRY OF A WEDGE," NOTS TM No. 576, (1952).

LOADS, Background

King, D.A. and Adams, R.C., MARTIN MODEL 270, WATER LOADS INVESTIGATION, HULL BOTTOM PRESSURES AND IMPACT LOADS," Martin Report ER 7516, November 1955.

LOADS, Background

Kreps, R.L., "EXPERIMENTAL INVESTIGATION OF IMPACT IN LANDING ON WATER", NACA TM 1046 (1943).

LOADS, Background

Lavrent'ev, M.T., Keldush M.V., et al., "COLLECTION OF PAPERS ON THE IMPACT AGAINST WATER SURFACE", Proceedings of the Central Aerodynamic Institute, U.S.S.R., No. 152, (1935).

LOADS, Background

Mackie, A.G., "A LINEARIZED THEORY OF THE WATER ENTRY PROBLEM," J. Mech. Appl. Math., 15, Part II, (1962).

LOADS, Background

Markey, M.F., "A GENERALIZED HYDRODYNAMIC IMPACT THEORY FOR THE LOADS AND MOTIONS OF DEEPLY IMMERSED PRISMATIC BODIES", NASA Memo 2-10-59L (1959).

LOADS, Background

Mayo, W.L., "HYDRODYNAMIC IMPACT OF A SYSTEM WITH A SINGLE ELASTIC MODE", NACA Report 1074.

LOADS,Background

Mayo, W.L. "ANALYSIS AND MODIFICATION OF THEORY FOR IMPACT OF SEAPLANES ON WATER", NACA TN 1008, 1945.

Summary Experimental Data; Extension Incompressible Theory for Oblique Impact.

LOADS,Background

Mayo, W.L., "THEORETICAL AND EXPERIMENTAL DYNAMIC LOADS FOR A PRISMATIC FLOAT HAVING AN ANGLE OF DEADRISE OF 22-1/2 DEG," NACA Report No. L 5 F15, 1945.

LOADS, Background

McArver, A.E., "WATER-LANDING INVESTIGATION OF A MODEL HAVING HEAVY BEAM LOADING AND 0-DEG ANGLE OF DEADRISE," NACA TN 2330 (1951).

LOADS,Background

McGoldrick, R.T., "SHIP VIBRATION," DTMB Report 1451, December 1960. AD 259-466.

LOADS, Background

Miller, R.W., "HYDRODYNAMIC IMPACT LOADS IN ROUGH WATER FOR A PRISMATIC FLOAT HAVING AN ANGLE OF DEADRISE OF 30 DEGREES," NACA TN 1776, (1948)

LOADS, Background

Miller, R.W., "HYDRODYNAMIC IMPACT INVESTIGATION OF CHINE IMMERSED 0° DEADRISE CONFIGURATION HAVING LONGITUDINAL CURVATURE", NASA TN D-207.

This contains an appended bibliography of Hydrodynamic Publications of Langley Impact Basin.

LOADS, Background

Milwitzky, B., "A GENERALIZED THEORETICAL AND EXPERIMENTAL INVESTIGATION OF THE MOTION AND LOADS EXPERIENCED BY V-BOTTOM SEAPLANES DURING STEP LANDINGS", NACA TN No. 1516, February 1948.

LOADS, Background

Milwitsky, B., "GENERALIZED THEORY FOR SEAPLANE IMPACT", NACA TR 1103, 1952.

LOADS, Background

Milwitzky, B., "A THEORETICAL INVESTIGATION OF HYDRODYNAMIC IMPACT LOADS ON SCALLOPED-BOTTOM SEAPLANES AND COMPARISONS WITH EXPERIMENT," NACA Report 867, 1947.

LOADS, Background

Mixson, J.S., "THE EFFECT OF BEAM LOADING ON WATER IMPACT LOADS AND MOTIONS", NASA Memo 1-5-59L (1959)

LOADS, Background

Monaghan, R.L., "A THEORETICAL EXAMINATION OF THE EFFECT OF DEADRISE ON WETTED AREA AND ASSOCIATED MASS IN SEAPLANE-WATER IMPACT," R&M No. 2681 ARC (1952).

LOADS, Background

Monaghan, R.J., "A REVIEW OF THE ESSENTIALS OF IMPACT FORCE THEORIES FOR SEAPLANES AND SUGGESTIONS FOR APPROXIMATE DESIGN FORMULAE," RAE Rep. Aero 2230, November 1947.

LOADS, Background

Monaghan, R.J., "A REVIEW OF THE ESSENTIALS OF IMPACT FORCE THEORIES FOR SEAPLANES AND SUGGESTIONS FOR APPROXIMATE DESIGN FORMULAS," R&M 2720, ARC (1952).

LOADS,Background

Monaghan, R.J. and Crewe, P.R., "FORMULAE FOR ESTIMATINC THE FORCES IN SEAPLANE-WATER IMPACTS WITHOUT ROTATION OR CHINE IMMERSION", R&M No. 2804, ARC (1955).

LOADS, Background

Noonan, E.F., and Zaloumis, A., "SHIP VIBRATION AND NOISE CONSIDERATIONS IN THE DESIGN OF RIVER TOWBOATS", DTMB Report 1758, July 1963. Paper Presented at the Marine propulsion meeting of the Society of Automotive Engineers, 14 May 1963, in St. Louis Mo.

The problems of vibration and noise aboard ship have been given increased attention by the Navy since World War II as a result of many technological developments and tactical requirements. Many problem areas are identified and those which have particular attention in the design of river tugboats are reviewed.

The paper is addressed primarily to the naval architect, shipbuilder, or operator and identifies those areas to which attention should be drawn during design and development. Specific suggestions and specifications are presented, based on current naval practice.

LOADS,Background

Ochi, M. and Schwartz, F.M., "TWO DIMENSIONAL EXPERIMENTS ON THE EFFECT OF HULL FORM ON HYDRODYNAMIC IMPACT," DTMB Report 1994, May 1966, AD 635-783.

LOADS, Background

Pabst, W., "THEORY OF LANDING IMPACT OF SEAPLANES," NACA TM No. 850, 1930.

LOADS, Background

Pabst, W., "THEORIE DES LANDESTOSSES VON SEEFLUGZEUGEN," Z. fur Flugtechnik und Motorluftschiffahrt, 21, 9, PP. 217-226 (1930) and 22, 1, PP. 13-28 (1931) Also NACA TM's 580, 624.

LOADS, Background

Perrone, N., "A NEW APPROACH TO IMPACT ATTENUATION", February 1970, Report No. 15 Submitted to the National Science Foundation under Grant No. G.K.-2802. Catholic University of America, Washington, D.C. 20017.

LOADS, Background

Pierson, J.D., "ON THE PRESSURE DISTRIBUTION FOR A WEDGE PENETRATING A FLUID SURFACE," Preprint No. 167 SMF Fund Paper, IAS, (DL Report 336), (1948).

LOADS, Background

Pierson, J.D., "STUDY O[illegible], PRESSURES, AND LOADS PERTAINING TO PRISMATIC VEE-PLANING SURFACES," May 1950, S[illegible], E.T.T. Report No. 382.

LOADS, Background

Pierson, J.D., "THE PENETRATION OF A FLUID SURFACE BY A WEDGE," SMF Fund Paper FF-3, IAS, July 1950. (ETT Report 381).

LOADS, Background

Pierson, J.D., "ON THE VIRTUAL MASS OF WATER ASSOCIATED WITH AN EMERSING WEDGE," Journal of Aeronautical Sciences, Vol. 18, pp 430-431. (1951).

LOADS, Background

Povitsky, A.S., "THE LANDING OF SEAPLANES," Report No. 423, Trans. CAHI (Moscow) (1939).

LOADS,Background

Sagomonyan, A. Ya., "PENETRATION OF A NARROW WEDGE INTO A COMPRESSIBLE FLUID," Vestnik Moslov. University, Ser. Mat. Mekh. Asti. Fiz. Khim. Vol. II, No 2. PP. 13-18, 1956.

LOADS, Background

Schnitzer, E., "THEORY AND PROCEDURE FOR DETERMINING LOADS AND MOTIONS IN CHINE-IMMERSED HYDRODYNAMIC IMPACTS OF PRISMATIC BODIES," NACA Report 1152, 1953.

LOADS, Background

Schnitzer, E., and Hataway, M.E., "ESTIMATION OF HYDRODYNAMIC IMPA T LOADS AND PRESSURE DISTRIBUTION ON BODIES APPROXIMATING ELLIPTICAL CYLINDERS WITH SPECIAL REFERENCE TO WATER LANDING OF HELICOPTERS", NACA TN 2889, (1953)

LOADS,Background

Sedov, L., "ON THE IMPACT OF A SOLID BODY ON THE SURFACE OF AN INCOMPRESSIBLE FLUID," Tr CAHI, Report 187, Moscow (1934), Also available as ACSIL Translation # 538, (1953).

LOADS, Background

Slalak, R. and Feit, D., "IMPACT ON THE SURFACE OF A COMPRESSIBLE FLUID," ASME Paper No. 65-WA/UnT-3, December 1965.

LOADS, Background

Smiley, R.F., "A STUDY OF WATER PRESSURE DISTRIBUTION DURING LANDINGS WITH SPECIAL REFERENCE TO A PRISMATIC MODEL HAVING A HEAVY BEAM LOADING AND A 30 DEG. ANGLE OF DEADRISE," NACA TN 2111 (1950)

LOADS, Background

Smiley, R.F., "A SEMIEMPIRICAL PROCEDURE FOR COMPUTING THE WATER-PRESSURE DISTRIBUTION ON FLAT AND V-BOTTOM PRISMATIC SURFACES DURING IMPACT OR PLANING," NACA TN 2583, (1951).

A semiempirical procedure is presented for computing the water-pressure distribution on flat and V-bottom prismatic surfaces during planing or landing. For the rectangular flat plate, a consideration of several previous theoretical derivations and some observations of the experimental data lead to the develpoment of simple equations which are in good agreement with experimental data for trims below 30° and for wetted-length-beam ratios at least up to 3.3. This development is based primarily on the assumption that the longitudinal distribution of pressure on a rectangular flat plate is substantially a function only of the normal-load coefficient so that this distribution may be computed from the existing theory for two-dimensional flow. The transverse distribution of pressure is obtained as a compromise between the available theoretical treatments for very small and very large wetted-length-beam ratios. For a V-bottom prismatic surface with appreciable chine immersion, the pressures on chine-immersed sections of a model having an angle of dead rise of 30° are found to be very similar to those on the corresponding flat plate so that a simple modification of the flat-plate equations can be used to predict approximately the pressures on V-bottom surfaces.

LOADS, Background

Smiley, R.F., "AN EXPERIMENTAL STUDY OF WATER PRESSURE DISTRIBUTIONS DURING LANDING AND PLANING OF A HEAVILY LOADED RECTANGULAR FLAT-PLATE MODEL", NACA TN 2453, Sept 1951.

LOADS, Background

Smiley, R.F., "THE APPLICATION OF PLANING CHARACTERISTICS TO THE CALCULATION OF THE WATER LANDING LOADS AND MOTIONS OF SEAPLANES OF ARBITRARY CROSS SECTIONS", NACA Tech. Note 2814, November 1952.

LOADS, Background

Smiley, R.F., "WATER-PRESSURE DISTRIBUTIONS DURING LANDINGS OF A PRISMATIC MODEL HAVING AN ANGLE OF DEAD RISE OF 22-1/2° AND BEAM-LOADING COEFFICIENTS OF 0.48 AND 0.97," NACA TN 2816, November 1952.

As part of an over-all program, smooth-water landing tests of a prismatic float having an angle of dead rise of 22-1/2° were made. Water-pressure, velocity, draft, and acceleration data are presented. Landings were made for beam-loading coefficients of 0.48 and 0.97 at fixed trims between 0.2° and 30.3° for a range of flight-path angles from 4.6° to 25.9° and also for 90°. The experimental pressure distributions are found to be in fair agreement with the predictions of the available theory; however, better agreement is obtained by modification of the theory.

LOADS, Background

Smiley, R.F., "A THEORETICAL AND EXPERIMENTAL INVESTIGATION OF THE EFFECTS OF YAW ON PRESSURES, FORCES, AND MOMENTS DURING SEAPLANE LANDINGS AND PLANING," NACA TN 2817, November 1952.

LOADS, Background

Stefun, G., "SEAWORTHINESS OF THREE DESIGNS FOR A UNITED STATES COAST GUARD 160-FOOT WATER PATROL CRAFT", David W. Taylor Model Basin, Report 1009, February 1956.

The results of a seaworthiness investigation are presented for three designs of a proposed United States Coast Guard 160-ft water patrol craft. The results were obtained from model tests in regular head seas with a wavelength to wave height ratio of 15:1.

A comparison of the three designs with respect to speed reduction in waves, magnitudes of vertical acceleration and amplitudes of motions, indicates that no one design is superior to the other two in all respects. The selection of the most suitable design, therefore, depends on which performance characteristics are considered to be of major importance. The conclusion is reached that the design designated as B is the best with respect to amplitudes of accelerations and motions, and Design C is the best with respect to resistance in waves. The major difference in the two designs in that Design B has a transom stern and Design C a cruiser stern.

LOADS, Background

Steiner, M.F. "ANALYSIS OF PLANING DATA FOR USE IN PREDICTING HYDRODYNAMIC IMPACT LOADS" NACA TN 1694, August, 1948.

LOADS, Background

Sydov, J., "THE EFFECT OF SPRING SUPPORT AND KEELING ON LANDING IMPACT", Jahrbuch Deutsch Luftfahrtforschung, Vol. 1, Pgs 329-338 (1938).

LOADS, Background

Szebehely, V.G., "ON SLAMMING", European Shipbuilding, Vol. 3,4, pp. 80-86, (1954).

LOADS, Background

Szechenyi, E., "AN APPROXIMATE METHOD FOR THE DETERMINATION OF THE NATURAL FREQUENCIES OF SINGLE AND STIFFENED PANEL STRUCTURES", Institute of Sound and Vibration Research, Technical Report 23, March 1970. Institute of Sound and Vibrations Research, University of Southampton.

LOADS, Background

Tamotsu, N., et. al., "ON THE TRANSIENT TRANSVERSE STRENGTH OF A TORPEDO BOAT DURING SLAMMING," Part 1, Journal of the Society of Naval Architects of West Japan, 31, 1966.

LOADS, Background

Von Karman, T., "THE IMPACT OF SEAPLANE FLOATS DURING LANDING," NACA TN 321, 1929.

LOADS, Background

Wagner, H., "UBER STOSS - UND GLEITVORGANGE AN DER OBERFLACHE VON FLUSSIGKEITEN," ZAMM, 12, 4, pp. 192-215, 1932.

LOADS, Background

Wagner, H., "LANDING OF SEAPLANES," NACA TN 622, May 1932.

LOADS, Background

Wagner, H., "THE PHENOMENA OF IMPACT AND PLANING ON WATER," NACA Translation No. 1366, August 1932.

LOADS, Background

Ward Brown, P., "SEAPLANE IMPACT THEORY," Shorts HN 46, Belfast, August 1954. Short Brothers and Harland, Ltd.

LOADS, Background

Weibie, A., "THE PENETRATION RESISTANCE OF BODIES WITH VARIOUS HEAD FORMS AT PERPENDICULAR IMPACT ON WATER," Nav. Res. Lab. Translation No. 286, (1952).

LOADS, Background

Weinig, F., "IMPACT OF A VEE-TYPE SEAPLANE ON WATER WITH REFERENCE TO ELASTICITY," NACA TM 810 (1936).

LOADS,Background

Wereldsma, R., and Mercier, J., "MEASUREMENTS OF PROPELLER INDUCED VIBRATORY STERN PRESSURE", September 1968, DL Report No. 1321.

LOADS,Background

Frankland, J.M., "EFFECT OF IMPACT ON SIMPLE ELASTIC STRUCTURES", DTMB Report No. 481, April 1942. AD 408-33

LOADS,

Mewes, E., "DIE STOSSKRAFTE AN SEEFLUGZEUGEN BEI STARTS UND LANDUNGEN," J. Vereinigung fur Luftfahrtforschung (1935).

LOADS,

Meyerhoff, W.K., "DIE BERECHNUNG HYDROELASTICHER STOTZE," Schiffstechnik 12, No. 60,61, (1965).

LOADS,

Roark, R.J., FORMULAS FOR STRESS AND STRAIN, McGraw-Hill Book Co. Inc., 1954.

Best source for formulas and tables for bending, buckling, diaphragm loading etc.

STRESS, Essential

Timoshenko, S. and MacCullough, G.H., ELEMENTS OF STRENGTH OF MATERIALS, D. Van Nostrand Co, Inc., New York.

Good text for strength of materials.

STRESS, Essential

Danahy, P.J., "ADEQUATE STRENGTH FOR SMALL HIGH SPEED VESSELS", Paper No. 67-355-AIAA/SNAME Advanced Marine Vehicles Meeting, Norfolk Va, May, 1967; also Marine Technology, January 1968.

A method for determination of minimum scantlings is presented. Several existing craft are included as examples.

STRESS, Useful

Preceding page blank

Boswell, R.J., "STATIC STRESS MEASUREMENTS ON A HIGHLY-SKEWED PROPELLER BLADE", NSRDC Report 3247, December 1969.

Static stresses were measured on a highly skewed marine propeller blade using a specially constructed pressure chamber which allowed the blade to be loaded under air pressure. The measured stress distribution was radically different from those previously measured on unskewed blades. The highest stresses occurred in a relatively narrow band extending from near the trailing edge at the blade root to near the leading edge at 90-percent radius. For a uniform pressure loading of 1.0 psi, the maximum measured principal stress was 2200 psi in compression and 1800 psi in tension. The maximum radial stress calculated by beam theory for the equivalent unskewed propeller was 910 psi both in tension and compression.

STRESS, Background

Culhane, T.J. and Petrisko, E.M., "STRESS ANALYSIS OF FIBER GLASS BOAT HULL UNDER SHOCK LOADING", Navy Marine Laboratory, Report 36/66.

An experimental stress analysis of the high stress areas of a fiber glass boat hull was conducted during normal boat operation and while firing a 57-mm gun. The purpose of the test was to obtain data bearing on the integrity of the fiber glass hull from a shock-fatigue standpoint. The measurements indicated a range of shock loadings which could be tolerated before cracking of the outside fiber glass hull occurred. STRESS, Background

Otsu, Y., et. al., "STRUCTURAL TESTING OF SMALL CRAFT", Pgs. 146-151 of Fishing Boats of the World: 2, (1959) Edited by Jan-Olof Traung, Food and Agriculture Organization of the United Nations, Published by Fishing News (Books) Ltd., London.

An interesting account of a loading test on a typical 36 ft. wooden hard chine fishing craft in which deflections are measured and stresses calculated,

STRESS, Background

Anonymous, "STRUCTURAL DESIGN OF FLAT PLATING AND STIFFENERS SUBJECT TO WATER PRESSURE-DESIGN DATA SHEET,, Bureau of Ships, DDS1100-4.

STRESS,

Anonymous, A GUIDE FOR THE ANALYSIS OF SHIP STRUCTURES , U.S. Department of Commerce.

STRESS,

Anonymous, "STRENGTH OF STRUCTURAL MEMBERS-DESIGN DATA SHEET," Bureau of Ships. DDS1100-3.

STRESS,

Schoenherr, K.E., "FORMULATION OF PROPELLER BLADE STRENGTH", SNAME, 1963.

STRESS,

Anonymous, "PROCEDURE HANDBOOK OF ARC WELDING DESIGN AND PRACTICE," The Lincoln Electric Company, Cleveland 17, Ohio.

CONST, Useful

D'Arcangelo,A., A GUIDE TO SOUND SHIP STRUCTURES , (1969) Cornell Maritime Press.

Good basic structural design information, basically applicable to metal ships but a useful reference for small craft structures particularly in steel.

CONST, Useful

Fraser, D.J., "ESTIMATED HULL WORK AND MATERIAL CONTENT FOR 100 FT COMBINATION FISHING VESSEL IN DIFFERENT MATERIALS", Paper Presented at Conference on Fishing Vessel Construction Materials, Montreal, October 1968.

An outstanding paper, a 100 ft. fishing vessel is designed in steel, aluminum, wood, GRP and ferro cement. Midship sections are presented for each design. Weights and costs are included.

CONST, Useful

Fyson, J.F., "BOATYARD FACILITIES", (with discussion) Pgs. 201-211 of Fishing Boats of the World: 3 (1965) Edited by Jan-Olof Traung, Food and Agriculture Organization of the United Nations, Published by Fishing News (Books) Ltd. London.

Good general description of wood boatbuilding techniques, ship equipment and facilities. Cost estimating and job planning is discussed.

CONST, Useful

Hanson, H.C., "STEEL AND WOOD SCANTLING TABLES (WEST COAST OF U.S.A.)" Pgs. 137-145 of Fishing Boats of the World:2 (1959), Edited by Jan-Olof Traung, Food and Agriculture Organization of the United Nations, Published by Fishing News (Books) Ltd. London.

Figures and Scantling tables are given for small fishing vessels not covered by bodies such as Lloyds and A.B.S. They are for wooden boats of from 30 to 90 ft. with bent-frame construction and for those of from 30 to 125 ft. with sawn frames. They also cover V-bottom wooden boats of from 30 to 90 ft. and welded steel vessels of from 30 to 130 ft. in length overall.

CONST, Useful

Kilgore, U., "GENERATION OF DEVELOPABLE HULL SURFACES" The Planimeter 1/65 SSCD.

CONST, Useful

Kline, R.A., "SOME ASPECTS OF CONICAL HULL DEVELOPMENT", SNAME, Northern California Section, 1959.

CONST, Useful

Tjossen, W.W., "LINES DEVELOPMENT BY CONIC CONSTRUCTION," The Planimeter, SSCD 6/64.

CONST, Useful

Bader, J., "LANDING CRAFT STRUCTURE STATE OF THE ART REVIEW," NSRDC Report No. 2549, February 1969, AD 850 814.

An outstanding structural study of 30 designs for advanced landing craft. Comparison is made between designs and to existing craft with respect to unit structural wts., design criteria, cost versus payload, etc.

CONST, Background

Brandlmayr, J., "A COMPARATIVE ASSESSMENT AND FUTURE OUTLOOK FOR MATERIALS IN FISHING VESSEL CONSTRUCTION, WITH PARTICULAR REFERENCE TO PLYWOOD", Paper presented at Conference on Fishing Vessel Construction Materials, Montreal, October, 1968.

Plywood, solid wood, and GRP, steel and aluminum are compared with respect to their suitability for fishing vessel construction.

CONST, Background

Burgess, C.P., "DEVELOPABLE SURFACES FOR PLYWOOD BOATS", The Rudder, February 1940.

CONST, Background

Colvin, T.E., "THE NAVAL ARCHITECT AND THE SMALL STEEL BOAT BUILDER," The Planimeter, June and July, 1960, SCCD.

CONST, Background

Ferris, L.W., "DEVELOPABLE SURFACES", ASNE Journal, May 1961.

CONST, Background

Ferris, L.W., "A STANDARD SERIES OF DEVELOPABLE SURFACES," SNAME, Marine Technology, January 1968.

A method for mathematically generating lines for developable surface craft. Example is given for a convex bottom hard chine boat.

CONST. Background

Giffin, A.H., "COAST GUARD 40' UTILITY BOAT CURRENT CONSTRUCTION METHODS", Presented 13 October 1951 Chesapeake Section SNAME at U.S.Coast Guard Yard, Curtis Bay, Maryland. (B-8743 Treasury CGHQ, Washington, D.C.)

CONST,Background

Goodwin, E.L., "A PLACE TO MOLD FIBERGLASS BOATS," Symposium-Structural Design and Production of Small Boats and Yachts, SNAME, N.Y. Section, January 1966.

CONST,Background

Graul, T. and Fry, E.D., "DESIGN AND CONSTRUCTION OF METAL PLANING BOATS", SNAME Spring Meeting, Montreal, July 1967.

CONST,Background

Hanson, P.S., "A LIGHTWEIGHT DURABLE ALL-METAL YACHT," SNAME, New York Metropolitan Section, January 1966.

Account of design, construction, and service of a copper-nickel yacht.

CONST. Background

Hartman, G., "DEVELOPING A PLYWOOD DESIGN", Motor Boating, January 1945.

See also expansion of this work in Saunders, Vol. II, Section 76.8

CONST,Background

Ketcham, R.P., "DESIRABLE AND UNDESIRABLE FEATURES OF SMALL CRAFT DESIGN AND CONSTRUCTION", SNAME Symposium - Structural Design and Production of Small Boats and Yachts. New York Section, SNAME, January 1966.

CONST, Background

Kilgore, U., "DEVELOPABLE HULL SURFACES", Pgs. 425-431 of Fishing Boats of the World: 3, (1956), Edited by Jan-Olof Traung, Food and Agriculture Organization of the United Nations, Published by Fishing News (Books) Ltd., London.

Describes principles and methods of developed surface hull design.

CONST,Background

Phannemiller, G.M., "MODERN DESIGN AND CONSTRUCTION METHODS AS APPLIED TO 95-FT. PATROL BOATS," SNAME, Transactions 1954.

CONST, Background

Rabl, S.S., "MULTICONIC DEVELOPMENT OF HULL SURFACES," Chapter 9 of "Problems in Small Boat Design" Edited by Gerald Taylor White, 1959, Sheridan House, New York.

CONST, Background

Robb, A.M., "STRAIGHT-FRAME SHIPS," IESS, 1924-1925.

CONST, Background

Verweij, D., "COMPARISON BETWEEN PLASTIC AND CONVENTIONAL BOAT-BUILDING MATERIALS". (with discussion), Pgs. 270-276, of <u>Fishing Boats of the World</u>: 3 (1965) Edited by Jan Olof Traung, Food and Agriculture Organization of the United Nations, Published by Fishing News (Books), Ltd., London.

GRP (simple skin and sandwich) is compared to steel, aluminum, and various woods for strength, weight, durability and cost.

CONST, Background

Werback, C.E., "MORE ABOUT DEVELOPABLE SURFACES," The Rudder, March 1945.

CONST, Background

Whittier, B., "PLYWOOD AND KITS," Article in three parts from "Boats", March, May, and September, 1955.

CONST, Background

Brandlmayr, J., "AN EVALUATION OF PLYWOODS AND PLASTICS IN BOAT CONSTRUCTION", The Engineering Journal, June 1961.

CONST,

Losee, L.K., "DEVELOPABLE SURFACES: THEIR PROPERTIES AND DELINEATION AS APPLIED TO THE SHELLS OF VESSELS", Unpublished Manuscript dated 7 February, 1947, BUSHIPS (1955).

CONST,

Wah, T., "INVESTIGATION OF STIFFENED STEEL PLATES," Southwest Res. Inst. April 1966, AD 631-632.

CONST,

Angermayer, R., STRUCTURAL HANDBOOK, Kaiser Aluminum and Chemical Sales, Inc., 1967.

ALUM, Useful

Anonymous, "SPECIFICATIONS FOR STRUCTURES OF ALUMINUM ALLOYS - ALUMINUM CONSTRUCTION MANUAL," The Aluminum Association, 420 Lexington Ave., New York, N.Y., 10017, May 1963.

ALUM, Useful

Anonymous, "RECOMMENDED ALUMINUM APPLICATIONS FOR BOATS AND YACHTS. SPECIAL INFORMATION REPORT, S-1," ABYC.

ALUM, Useful

Anonymous, ALUMINUM AFLOAT, Aluminum Company of America, Pittsburg, 1964.

Good general text on marine applications.

ALUM, Useful

Anonymous, ALUMINUM BOATS, Kaiser Aluminum & Chemical Sales, 1964, Oakland, Calif.

Contains some engineering and production data of value.

ALUM, Useful

Colvin, T.E. "ALUMINUM ALLOYS IN SMALL CRAFT DESIGN AND CONSTRUCTION", Chapter 16 of Problems in Small Boat Design (1959), Edited by Gerald Taylor White, Sheridan House, New York, also in The Planimeter, October, November, December, 1955, SSCD.

ALUM, Useful

Deveau, C.W. "ALUMINUM AND ITS USE IN FISHING BOATS" (with discussion), Pgs. 229-245 of Fishing Boats of the World: 3 (1965) Edited by Jan-Olof Traung, Food and Agriculture Organization of the United Nations, Published by Fishing News (Books) Ltd., London.

Comprehensive discussion of Aluminum hull construction. Tables of material properties and welding and riveting procedures are presented. Structural details sketches and photos of aluminum craft under construction are included. ALUM, Useful

Leveau, C.W., "ALUMINUM AND ITS USE IN NAVAL CRAFT", Part I, ASNE Journal, Feb., 1965
Part II, ASNE Journal, April, 1965.

Excellent data on welded aluminum construction.

ALUM, Useful

Lyst, J.O., "FATIGUE PROPERTIES OF 5000 SERIES ALLOYS AT ROOM AND ELEVATED TEMPERATURES," Aluminum Company of America Report No. 9-64-113, April 10, 1964, (not released for publication).

ALUM, Useful

Ifoutz, D.R., "ALUMINUM ON WATER-AN ANNOTATED BIBLIOGRAPHY ON USES OF ALUMINUM IN BOATS AND SHIPS," The Aluminum Association, 420 Lexington Avenue, New York, N.Y. 10017.

437 articles listed with notes.

ALUM, Useful

Rukin, J.B., "RECOMMENDED GUIDE FOR ALUMINUM CREWBOATS AND YACHTS," Reynolds Metal Co.

ALUM, Useful

Svenkerud, H.. "ALUMINUM AS A FISHING VESSEL CONSTRUCTION MATERIAL", Paper presented at Conference on Fishing Vessel Construction Materials, Montreal, October, 1968.

Properties and fabrication procedures for marine aluminum are described.

ALUM, Useful

Adkins, H.E. and Ridout, R., "AN INTRODUCTION TO ALUMINUM ALLOYING AND DESIGNATION," Boat Construction and Maintenance, January 1965.

ALUM, Background

Anonymous, "MOTOR YACHT TONQUIN," Engineer, August 1952.

ALUM, Background

Anonymous, "NAVY STUDIES PT BOATS WITH ALUMINUM HULLS," Alcoa News, April 1950.

ALUM, Background

Anonymous, "NEW ALUMINUM MINESWEEPER FOR THE CANADIAN NAVY," Modern Metals, August 1952.

ALUM, Background

Anonymous, "SMALL CRAFT IN LIGHT ALLOYS," Light Metals, August 1946.

ALUM,Background

Anonymous, "WELDED LIGHT ALLOY YACHTS," Engineer, July 1953.

ALUM, Background

Anonymous, "WELDED ALUMINUM BOATS," Welding Journal, March 1949.

ALUM, Background

Anonymous, "TWO-WAY TENSION ALUMINUM ALLOY CONSTRUCTION," Ship andBoat Builder, December 1952.

ALUM, Background

Anonymous, "STANDARD FOR ALUMINUM MILL PRODUCTS", Aluminum Association.

ALUM, Background

Anonymous, "ONE-PIECE ALUMINUM BOAT," Modern Industrial Press, Vol. II, January 1949.

ALUM, Background

Anonymous, "ALUMINUM ALLOY LIFEBOATS", Engineering, December, 1953

ALUM, Background

Anonymous, <u>ALUMINUM FORMING</u>, Reynolds Metals Co., 1961.

ALUM, Background

Brierly, F. St. M., "SERVICE EXPERIENCE WITH ALUMINUM ALLOY BOATS," Shipbuilding and Shipping Record, September 1958.

ALUM, Background

Butz, G.A. and Nordmark, G.E., "FATIGUE RESISTANCE OF ALUMINUM AND ITS PRODUCTS", Distributed by Alcoa, September 1964.

ALUM, Background

Campbell, R.A., "SHIPBUILDING WITH ALUMINUM," Paper Presented at Conference on Fishing Vessel Construction Materials, Montreal, October 1968.

Detailed discussion of the design, construction and operation of the 117 ft. aluminum cargo vessel "Independence".

ALUM, Background

Colvin, T.E., "CARE AND MAINTENANCE OF ALUMINUM VESSELS", The Planimeter 4-5-6-58 SSCD.

ALUM, Background

Colvin, T.E., "THE CARE AND MAINTENANCE OF ALUMINUM BOATS", Boating Industry, Nov.1957.

ALUM, Background

Ducane, P., "THE BRAVE CLASS FAST PATROL BOATS, AN ALL-WELDED ALUMINUM STRUCTURE", Welding and Metal Fabrication, February 1961, England.

ALUM, Background

Fahey, J., "ALUMINUM YACHT CONSTRUCTION - PRESENT AND FUTURE", SNAME, New York Metropolitan Section, January, 1966.

ALUM, Background

Godard, H.P., "THE CORROSION BEHAVIOR OF ALUMINUM", Corrosion, Vol. II, No. 12, Dec,1955.

ALUM, Background

Graul, T., "COAST GUARD INSPECTION OF ALUMINUM BOATS", Boat Construction and Maintenance, May, 1968.

ALUM, Background

Holtyn, C.H., "SHIPBUILDING GUIDE TO ALUMINUM CONSTRUCTION," (1963) Reynolds Metals Co.

ALUM, Background

Holtyn, C.H., (Reynolds Metal Co.) "ALUMINUM, FROM BOATS TO SHIPS", Pacific N.W. Section SNAME, April 5, 1963.

ALUM, Background

Holtyn, C.H., (Reynolds Metals Co.) "THE DESIGN, CONSTRUCTION AND OPERATIONAL EXPERIENCE OF ALUMINUM BARGES", SNAME Gulf Section, February, 1964.

ALUM, Background

Holtyn, C.H., (Reynolds Metals Co.) "ALUMINUM - THE AGE OF SHIPS," SNAME Transactions, 1966.

History and present applications of aluminum hulls.

ALUM, Background

Leveau, C.W., "MARINE ALUMINUM APPLICATIONS," Kaiser Aluminum, Oakland, Calif.

ALUM, Background

Leveau, C.W. "ALUMINUM IN THE MARINE INDUSTRY", The Planimeter, 9/10/56, SSCD.

ALUM, Background

Leveau, C.W., "ALUMINUM IN BOAT CONSTRUCTION", Kaiser Aluminum and Chemical Sales, Oakland, Calif., SSCD Paper, January 17, 1964.

ALUM, Background

Lindberg, R.I. "ALUMINUM IN MARINE ENVIRONMENTS", ASNE Journal, Feb, 1961.

ALUM,Background

Muckle, W., "THE DESIGN OF ALUMINUM ALLOY SHIP STRUCTURES", Kings College, University of Durham, Newcastle-upon-Thyme, England.

ALUM, Background

Wyland, G.G., "WHAT I'D DO DIFFERENTLY IF I BUILT WINDCALL TODAY," Boating, October 1965.

ALUM, Background

Anonymous, "ALUMINUM IN CONTACT WITH OTHER MATERIALS", The ADA Information Bulletin 21, The Aluminum Development Association, Linden, December, 1955.

ALUM,

Little, R.S., "INTRODUCTORY NOTES TO ALUMINUM," American Bureau of Shipping.

ALUM,

McMullon, E.B., "ALUMINUM HONEYCOMB STRUCTURES" (Summary only), Paper presented at symposium "Modern Developments in Materials Applicable to Yacht Construction," University of Southampton, England, 11 April 1969.

ALUM,

Anonymous, "NOTES IN REGARD TO THE PHYSICAL PROPERTIES OF SEACRETE," , Windboats, LTD. Wroxham, Norfolk, England.

CEMENT, Useful

Canby, C.D., "FERRO-CEMENT WITH PARTICULAR REFERENCE TO MARINE APPLICATIONS", Pacific N.W. Section, SNAME, March 1969.

CEMENT, Useful

Collins, J.F. and Clayman, J.S., "FERRO-CEMENT FOR MARINE APPLICATION - AN ENGINEERING EVALUATION", SNAME New England Section, March 1969.

CEMENT, Useful

Muhlert, H.F., "ANALYSIS OF FERRO-CEMENT IN BENDING", January 1970, University of Michigan, Department of Naval Architecture, Report No 043, also SNAME, Eastern Canadian Section, Montreal, December 2, 1969.

CEMENT, Useful

Pospelov, V.I. "ALLOWANCE FOR FLEXIBILITY IN STRENGTH CALCULATIONS OF MARINE FERROCONCRETE ELEMENTS", Abstract Journal, NAVSHIPS Translation No. 1176 (Abstract only)

CEMENT, Useful

Samson, J. and Wellans, G., HOW TO BUILD A FERRO-CEMENT BOAT , (1968) Samson Marine Design Enterprises, Ltd., Ladner, B.C. Canada.

CEMENT, Useful

Sutherland, W. and Jackson, G., CONCRETE BOAT BUILDING, ITS TECHNIQUE AND ITS FUTURE, International Marine Publishing Co., 21 Elm St., Camden, Maine, 04843.

CEMENT, Useful

Alexander, D., "A TECHNICAL REVIEW OF FERRO-CEMENT CONSTRUCTION," Commercial Fishing, August, 1967.

CEMENT,Background

Anonymous, "TO SEA IN A STONE," The Skipper, December 1967.

CEMENT,Background

Anonymous, "BUILDING IN FERRO-CEMENT", Yachting Monthly, April, September, 1967.

CEMENT,Background

Anonymous, "FERRO-CEMENT: DOES IT HAVE A FUTURE IN THE WORK BOAT FIELD?" , The Workboat, February 1969, Pg. 22.

CEMENT, Background

Anonymous, "A NEW BOAT BUILDING MATERIAL," Ship and Boat Builder International, 1967.

CEMENT, Background

Bezukladov, V.F., et.al., "SHIP HULLS MADE OF REINFORCED CONCRETE, (DESIGN, STRENGTH AND CONSTRUCTION TECHNOLOGY)," Translation from Russian by L.C. Robbins. NAVSHIPS Translation No. 1148, 1968. AD 680-042. Scientific Documentation Division, Naval Ship Systems Command, Washington, D.C. 20360.

CEMENT, Background

Bonduryankiy, Z.P., "SEAGOING FERROCONCRETE SHIPS (HULL DESIGN)," (1966) Shipbuilding Publishing House, Leningrad, 199 pages, NAVSHIPS Translation No. 1175 (Abstract only).

CEMENT, Background

Collen, L.D.G., and Kerwan R.W., "SOME NOTES ON THE CHARACTERISTICS OF FERRO-CEMENT," Civil Engineering and Public Work Review, February 1959, pp. 195-196.

CEMENT, Background

Collen, L.D.G., "SOME EXPERIMENTS IN DESIGN AND CONSTRUCTION WITH FERRO-CEMENT", The Institute of Civil Engineering of Ireland, January 1960.

CEMENT, Background

Cox, E., "ITS AN EASIER WAY," Yachting Monthly, December 1966.

CEMENT, Background

English W.J., "GENERAL COMMENTS ON THE USE OF FERRO-CEMENT IN THE CONSTRUCTION OF FISHING VESSELS", Remarks from the floor at Conference on Fishing Vessel Construction Materials, Montreal, October, 1968.

Comments regarding advantages costs, techniques and misconceptions for the ferro-cement hull construction.

CEMENT,Background

Gardner, J., "FERRO-CEMENT IS THE HOTTEST THING IN BOATBUILDING", National Fisherman, June 1967.

CEMENT, Background

Gardner, J., "THE FUTURE OF FERRO-CEMENT", National fisherman, 1967.

CEMENT, Background

Gardner, J., "INTEREST IN FERRO-CEMENT BURGEONS: CAREFUL TESTS OF MATERIALS NEEDED," National Fisherman, August 1968.

CEMENT,Background

Gardner, J., "FERRO-CEMENT MOVES FROM BACKYARD TO SHOP", National Fisherman, Oct. 1968.

CEMENT, Background

Gardner, J., "NEED FOR FERRO-CEMENT BACKGROUND STRESSED," National Fisherman, March 1969.

CEMENT, Background

Gardner, J., "FROM TRUNNELS TO FERRO-CEMENT", National Fisherman, March 1969.

CEMENT, Background

Gardner, J., "FERRO-CEMENT FEATURES SPARK DIFFERING VIEWS", National Fisherman, July 1969.

CEMENT, Background

Griffith, N.H., "THE BUILDING OF AWAHNEE", Boating, Part II, March, 1969.

CEMENT, Background

Hagenbach, T.M., "FERRO-CEMENT BOATS, Paper Presented at Conference of Fishing Vessel Construction Materials, Montreal, October 1968.

History of ferro-cement and a somewhat biased advertisement for "Seacrete".

CEMENT, Background

Irons, M.E., "SEACRETE STERN TRAWLERS," Fishing News International (1967) (U.K.)

CEMENT, Background

Kelly, A.M. and Mouat, T.W., "FERRO CEMENT AS A FISHING VESSEL CONSTRUCTION MATERIAL", Conference on Fishing Vessel Construction Materials, October 1968, Federal-Provincial Atlantic Fisheries Committee Industrial Development Service, Department of Fisheries of Canada, Ottawa.

CEMENT, Background

Mishutin, V.A., "INVESTIGATION OF SHIPBUILDING CONCRETES," (1967) Shipbuilding Publishing House, Leningrad, NAVSHIPS Translation No. 1174. (Abstract only).

CEMENT,Background

Nervi, P.L., "FERRO-CEMENT: ITS CHARACTERISTICS AND POTENTIALITIES", (1951), Translated from the Italian; d'Inginere, No. 1, S.L.A. Translation Center.

CEMENT, Background

Nervi, P.L., "SMALL CRAFT CONSTRUCTION IN FERRO-CEMENT," Shipbuilding and Shipping Record, 1956, Vol. 88 No. 12.

CEMENT,Background

Norris, C.F., "WHY NOT FERRO-CEMENT?" Marine Technology, January 1969, pp. 43-47.

CEMENT, Background

Samson, John, "FERRO-CEMENT BOAT CONSTRUCTION", Conference on Fishing Vessels Construction Materials, October 1968, Federal-Provincial Atlantic Fisheries Committee. Industrial Development Service, Dept. of Fisheries of Canada, Ottawa.

CEMENT, Background

Skimmer, G., "WORLD CRUISER CONCRETE YACHT," Modern Boating, January 1968.

CEMENT, Background

Spratt, G.W., "RESEARCH AND DEVELOPMENT - FERRO-CEMENT USAGE," Seminar: Ferrocement Industry, Vancouver, B.C., Canada, March 1969.

CEMENT, Background

Talbot, M.R., "CEMENT HULL CUTS BUILDING COSTS", Fishing Gazette, January, 1968.

CEMENT, Background

Yi-Yan, S., "REINFORCED GLASS FIBER CONCRETE BARGES, (BOLISI SHUINICHUAN)," Naval Intelligence Command Translation No. 2576, 15 [illegible], 1968.

CEMENT, Background

Anonymous, "FERRO-CEMENT STATE OF THE ART", Naval Ship Engineering Center Report, July 1969.

CEMENT,

Byrne, J.G. and Wright, W., "AN INVESTIGATION OF FERRO-CEMENT USING EXPANDED METAL," Concrete and Constructional Engineering, Vol. LXI, No. 12, December 1961.

CEMENT,

Canby, C.D., "FERRO CEMENT WITH PARTICULAR REFERENCE TO MARINE APPLICATIONS", Presented to the Pacific Northwest Section of SNAME, March 1969.

CEMENT,

Hurd, M.K., "FERRO-CEMENT BOATS", ACI Journal, March 1969.

CEMENT,

James, T.L., "FERRO-CEMENT CONSTRUCTION", Paper presented at symposium "Modern Development in Materials Applicable to Yacht Construction", University of Southampton, England, 11 April 1969.

CEMENT,

Muhlert H., Jergovich, N. and Coleman, J.F., "FERRO-CEMENT TRAWLER, DESIGN STUDY REPORT", (1968) Department of Naval Architecture and Marine Engineering, The University of Michigan.

CEMENT,

Smith, J., "WHAT DO YOU KNOW ABOUT FERRO-CEMENT," Yachting, April 1969.

CEMENT,

Verney, M., "AN ACCOUNT OF A 44FT. FERRO-CEMENT FISHING TRAWLER BUILT BY GORDON W. ELLIS, VICTORIA, B.C.", Plastering Industries, March, 1967.

CEMENT

Gibbs and Cox Inc., "MARINE DESIGN MANUAL FOR FIBERGLASS REINFORCED PLASTICS," McGraw-Hill Book Co. Inc., New York, 1960.

Very comprehensive handbook, still the "bible" for GRP small craft construction.

GLASS, Essential

Buermann, T.M. and Della Rocca, R.J., "FIBERGLASS REINFORCED PLASTICS FOR MARINE STRUCTURES", (1960), SNAME Transactions Vol. 68, Pgs. 138-192.

GLASS Useful

Cobb, B. Jr., FIBERGLASS BOATS-CONSTRUCTION AND MAINTENANCE, (1956) Yachting Publishing Co., New York.

Reprints of articles from Yachting Magazine.

GLASS, Useful

Della Rocca, R.J., "A 110FT. FIBERGLASS REINFORCED PLASTIC TRAWLER", (with discussion), Pgs. 255-269 of Fishing Boats of the World: 3 (1965) Edited by Jan-Olof Traung, Food and Agriculture Organization of the United Nations, Published by Fishing News (books) Ltd., London.

A design study for a GRP trawler; materials selection is discussed at length including comparison to structural designs for the same craft in wood and steel. GRP designs are presented in both single skin and sandwich.

GLASS, Useful

Gibbs and Cox, MARINE SURVEY MANUAL FOR FIBERGLASS REINFORCED PLASTICS, Available from Sailing Book Service, 34 Oak Ave., Tuckahoe, N.Y. 10707.

GLASS, Useful

Lunn, J.S., and Berg, R., "HULL TO DECK JOINTS IN FIBERGLASS BOATS", Symposium-Structural Design and production of Small Boats and Yachts, SNAME, New York Section, January 1966.

GLASS, Useful

Perry, H.A., ADHESIVE BONDING OF REINFORCED PLASTICS, McGraw-Hill Book Company, New York, 1959

GLASS, Useful

Silvia, P.A., "BOLTING HIGHLY LOADED FOUNDATIONS TO FIBERGLASS STRUCTURES", U.S. Coast Guard, Naval Engineering Division.

GLASS, Useful

Sonneborn, R.H., FIBERGLASS REINFORCED PLASTICS, (1954) Reinhold Publishing Corp. New York.

An early standard reference, now outdated.

GLASS, Useful

Alfers, J.B. and Graner, W.R., "REINFORCED PLASTICS - A STRUCTURAL MATERIAL FOR MARINE APPLICATIONS," Transactions SNAME, 1954.

GLASS, Background

Anonymous, "UNSINKABLE TWIN HULL," Modern Plastics, March 1966.

Account of construction of a 50 ft. polyurethane cored catamaran by spray-up of foam on male molds.

GLASS, Background

Anonymous, "SOUTH AFRICA SHOWS THE WAY IN FIBERGLASS TRAWLERS," Fishing Gazette, June 1967, 416 Eighth Ave., New York, N.Y. 10001.

GLASS, Background

Anonymous, "REPORT ON CONSTRUCTION OF LARGE FIBERGLASS CRAFT," International Ship Structure Congress, 1967.

GLASS, Background

Anonymous, "REPORT OF COMMITTEE 8C ON SYNTHETIC MATERIALS," Ship Structures Laboratory, Delft, International Ship Structures Congress, July 1964.

Excellent "State of the Art" report for GRP to 1964 with emphasis on European industry.

GLASS, Background

Anonymous, "PREVENTIVE MAINTENANCE AND REPAIR MANUAL FOR FIBROUS GLASS REINFORCED PLASTIC LAMINATES," Bureau of Ships, NAVSHIPS 250-364-4 (1959).

GLASS, Background

Anonymous, "MAINTENANCE AND REPAIR MANUAL FOR COAST GUARD PLASTIC BOATS," T.P. 1625, CG-339-1 (1960), U.S. Coast Guard.

GLASS, Background

Anonymous, "INSPECTION MANUAL FOR FIBROUS GLASS REINFORCED PLASTIC BOAT," Bureau of Ships, 1965.

GLASS, Background

Anonymous, "BIG BOAT - NO MOLD", Modern Plastics, March 1956.

Interesting account of the construction of a 42 ft. sailboat utilizing wood male forms and mahogany veneer in lieu of a conventional mold.

GLASS, Background

Brandl, K., "TECHNICAL AND ECONOMIC CRITERIA OF GLASS FIBER REINFORCED PLASTIC SANDWICH CONSTRUCTION IN BOAT BUILDING," Plastverarbeiter, Nos. 4 & 5, 1963.

Marine applications of the Swiss "Aerex" PVC foam.

GLASS, Background

Brandl, K., "CELLULAR PLASTICS OF PURE PVC AS A SANDWICH CORE FOR LARGE FRP BOAT HULLS", Paper presented at the Conference on Fishing Vessel Construction Materials, Montreal, October, 1968.

Describes material properties, testing and application of the Swiss "Aerex" PVC core material. Many small craft applications, to 77 ft. in length, are described and illustrated.

GLASS, Background

Bussemaker, O., "DEVELOPMENT AND CONSTRUCTION OF REINFORCED PLASTIC BOATS BY THE ROYAL DUTCH NAVY", British Plastics, No. 12, 1961.

GLASS, Background

Cheetham, M.A., "NAVAL APPLICATIONS OF REINFORCED PLASTICS," Paper presented at Symposium of the British Plastics Institute, July 1967.

Discussion of fiberglass craft constructed for the British Navy including a midship section for a large minesweeper.

GLASS, Background

Cobb, B.,Jr., "A REPORT ON LONG TERM DURABILITY OF FIBERGLASS BOATS," Yachting Magazine, September 1962.

GLASS, Background

Cobb, B. Jr., "JUDGING FIBERGLASS HULLS," Yachting Magazine, January, February 1968.

GLASS, Background

Cobb, B. Jr., "EVALUATION OF FIBERGLASS CONSTRUCTION FOR COMMERCIAL FISHING HULLS" Paper 15-C, 23rd Annual Technical Conference (1968) of the Reinforced Plastics/ Composites Division of SPI.

GLASS,Background

DeJutolo,H., "STRUCTURAL DESIGN WITH GLASS-REINFORCED PLASTICS", ASCE Annual Meeting and Environmental Engineering Conference, October, 1965.

GLASS, Background

DeLaszlo, Patrick D., "GLASS REINFORCED PLASTIC HULLS," (with discussion) Pgs. 188-199 of Fishing Boats of the World: 2 (1959) Edited by Jan-Olof Traung, Food and Agriculture Organization of the United Nations, Published by Fishing News (Books) Ltd., London.

Good description of all mat Halmatic FRP hull construction. Good photos and some structural details.

GLASS, Background

Della Rocca, R. and Scott, R.I., "MATERIALS TEST PROGRAM FOR APPLICATION OF FIBERGLASS REINFORCED PLASTICS TO U.S. NAVY MINESWEEPERS," Paper No. 11-B, 22nd Annual Conference of the SPI Reinforced Plastics Division, Washington, February 1967.

GLASS, Background

DuPlessis, H., "THE REAL STORY ON FIBERGLASS BOATS," August 1970, Amateur Boat Building Publication of International Amateur Boat Building Society, 3183 Merrill, Royal Oak, Michigan, 48072.

Interesting paper on long term performance of fiberglass in hull construction.

GLASS, Background

DuPlessis, H., "REINFORCED-PLASTIC TRAWLERS," Ship and Boat Builder International, December 1967.

GLASS, Background

Dushelev, V.V. and Solokov, I.A., "PLASTIC SHIP HULLS," Leningrad Sudostroyeniye, 1960.

GLASS, Background

Eisenhauer, D.A., "REINFORCED PLASTIC FISHING VESSELS - AN ATLANTIC PROVINCES ASSESSMENT AND FUTURE OUTLOOK," Paper Presented at Conference on Fishing Vessel Construction Materials, Montreal, October 1968.

Good guidance in materials selection, describes the growing pains of GRP as a hull material for fishing craft in the Atlantic Provinces of Canada.

GLASS, Background

Fried, N., and Graner, W., "DURABILITY OF REINFORCED-PLASTIC STRUCTURAL MATERIALS IN MARINE SERVICE", Marine Technology, July, 1966.

GLASS, Background

Hallett, H.R., and Simpson J.H., "PRACTICAL REINFORCED PLASTICS SHIPBUILDING," Symposium: Some Marine Applications of Reinforced Plastics, Southampton (U.K.), July 1967.

GLASS, Background

Hallett, H.R. and Simpson, J.S., "FABRICATION OF LARGE FRP TRAWLERS", (1968), 23rd Annual Technical Conference, Reinforced Plastics/Composites Division of the Society of Plastics Industry, Inc.

Excellent account of the first large scale production construction of 74 ft. and 83ft. fishing craft in GRP, in South Africa.

GLASS, Background

Hargrave, J.B., "DESIGN OF POWER BOATS FOR PRODUCTION IN FIBERGLASS", Symposium-Structural Design and Production of Small Boats and Yachts, SNAME N.Y. Section, January 1966.

GLASS, Background

Lawrence, J.H., POLYESTER RESINS, Reinhold Publishing Corp., New York, (1960).

GLASS, Background

Lord, L., "SYNTHETIC REINFORCEMENTS IN PLASTIC HULL CONSTRUCTION," Great Lakes Section, SSCD, April 1965, printed in The Planimeter

GLASS, Background

Mansfield, "A YACHT BROKERS COMMENTS ON FIBERGLASS YACHT CONSTRUCTION," SNAME, New York Section, January 1966.

GLASS, Background

Pearson, W.E., "MOLDING OF FIBERGLASS-REINFORCED PLASTIC BOAT HULLS AND COMPONENTS IN MATCHED METAL DIES," SNAME, New York Section, January 1966.

GLASS, Background

Petrisko, E.M., "STRESSES FROM STRAIN ON WOVEN-ROVING, FIBER-GLASS-REINFORCED PLASTIC", ASNE Journal, February 1968.

GLASS, Background

Phelps, M.E. and Schultz, L.N., "CONSTRUCTION OF PROTOTYPE PLASTIC MOTOR SURF BOAT", Puget Sound Naval Shipyard Materials Laboratory Report No. P-356-1, July 1957.

Excellent detailed account of construction of a 26 ft. surf boat by the "core-mold" method, many photos.

GLASS, Background

Pike, D.S. & Yeatman, M., "COMMERCIAL FISHING VESSELS IN GLASS FIBRE REINFORCED PLASTICS (CONSTRUCTION TECHNIQUES AND FUTURE TRENDS)", Paper Presented at Conference on Fishing Vessel Construction Materials, Montreal, October, 1968.

Detailed discussion of production of 74 ft and 83 ft production GRP Trawlers in South Africa. Designs for 97 ft., 146 ft., 200 ft. GRP crafts are discussed.

GLASS, Background

Scott, R., et. al., "SURVEY OF U.S. NAVY GLASS REINFORCED PLASTIC (GRP) SMALL CRAFT-FINAL REPORT," (1968), Gibbs & Cox, Inc., New York NAVSHIPS Contract No. N00024-67-C-5452.

Report of a comprehensive survey of 120 FRP Navy craft in service for periods up to 15 years.

GLASS. Background

Smirnov, V.I., And Meshcheryakov, V.V., "TESTING AND CONTROL OF SHIPBUILDING GLASS PLASTICS," Leningrad Sudostroyeniye, 1965.

GLASS, Background

Spaulding, K.B. Jr, and Della Rocca, R.J., "FIBERGLASS REINFORCED PLASTIC MINESWEEPERS", Transactions SNAME, 1965.

An account of the Navy's feasibility studies and development program toward a 180 ft. FRP minesweeper.

GLASS, Background

Spaulding, K.B. Jr., "A HISTORY OF THE CONSTRUCTION OF FIBERGLASS BOATS FOR THE NAVY", Bureau of Ships Journal, March 1966.

GLASS, Background

Spaulding, K.B. Jr. and Silvia, P.A., "DESIGN AND CONSTRUCTION OF FIBERGLASS BOATS FROM 60 TO 120FT. IN LENGTH, AN INTERNATIONAL SURVEY", Paper Presented at the 22nd Annual Meeting of the Reinforced Plastics Division of the Society of the Plastics Industry, Inc. February, 1967.

Good "State of the Art" summary to 1966. Thirteen midship section drawings are presented.

GLASS, Background

Taal, L. and Algra, E.A.H., "THE USE OF RIGID PVC FOAM CORES FOR SANDWICH CONSTRUCTION WITH PARTICULAR REFERENCE TO MARINE STRUCTURES," Paper read at Reinforced Plastic Group Conference on Sandwich Construction, 28 November 1963, The Netherlands.

GLASS, Background

True, "THE DEVELOPMENT OF A FIBERGLASS RIVER PATROL BOAT", SNAME, Pacific Northwest Section, April 1966.

GLASS, Background

Van Hoboken, J.A., "THE USE OF REINFORCED PLASTIC AND ITS PROPERTIES IN THE DESIGN AND CONSTRUCTION OF BOATS," Symposium- Structural Design and Production of Small Boats and Yachts, SNAME, N.Y. Section, January 1966.

GLASS, Background

Wimmers, H.J., "CONSIDERATION ON THE DESIGN AND CONSTRUCTION OF LARGER GLASS FIBRE REINFORCED POLYESTER SHIPS", Paper No.18, The 14th FRP-Conference, London, 1964.

Describes experience of the Netherlands Navy in the development of a large range of GRP craft to 77ft. in length of PVC cored construction.

GLASS, Background

Yoshiki, M, "THE PRESENT STATE OF AFFAIRS WITH RESPECT TO PLASTICS IN SHIPBUILDING IN JAPAN," International Ship Structures Congress Report, July 1964.

GLASS, Background

ALLEN, H.G., "TESTING OF REINFORCED PLASTICS" (Summary only), Paper presented at symposium "Modern Developments in Materials Applicable to Yacht Construction", University of Southampton, England, 11 April 1969.

GLASS,

Anonymous, "STRENGTH OF GLASS REINFORCED PLASTIC STRUCTURAL MEMBERS, PART I, SINGLE SKIN CONSTRUCTION," Naval Ship Engineering Center, Design Data Sheet, DDS 9110-9.

GLASS,

Anonymous, "STRENGTH OF GLASS REINFORCED PLASTIC STRUCTURAL MEMBERS, PART II, SANDWICH PANELS," Naval Ship Engineering Center, Design Data Sheet, DDS9110-9.

GLASS,

Anonymous, "DESIGN MANUAL FOR REINFORCED PLASTICS", NAVSHIPS 250-346-3 (1959)

GLASS,

Anonymous, "DESIGN MANUAL FOR JOINING OF GLASS REINFORCED STRUCTURAL PLASTICS", NAVSHIPS 250-634-1 (1961)

GLASS,

Anonymous, "GUIDE FOR THE SELECTION OF FIBERGLASS REINFORCED PLASTICS FOR MARINE STRUCTURES", Hull-Structure Committee, Panel HS-6, Task Group HS-6-3 (Structural Plastics) Bulletin 2-12 (1965), SNAME, New York.

GLASS,

Arkhangel'Skiy, B.A., and Al'Shits, I.M., "FIBERGLASS BOATBUILDING", Leningrad Sudostroyeniye (1963) 164 pages, translation by U.S. Department of Commerce, Office of Technical Services, Joint Publications Research Service, Technical Translation Number 64-31847.

GLASS,

Brown, G.F., "COLD PRESS MOLDING OF REINFORCED PLASTICS", Paper presented at Symposium, "Modern Development in Materials Applicable to Yacht Construction", University of Southampton, England, 11 April 1969.

GLASS,

Bushey, A.C., et al, "LAMINATED GLASS PLASTIC CONSTRUCTION WITH SPECIAL REFERENCE TO BOATS" SNAME, Cheaspeake Section, February 1952.

GLASS,

Cobb, B. Jr., "DESIGN, CONSTRUCTION AND ECONOMIC CONSIDERATIONS IN FIBERGLASS TRAWLER CONSTRUCTIONS", Paper Presented at Conference on Fishing Vessel Construction Materials, Montreal, October 1968.

Good discussion of the potential of FRP as a trawler hull material. FRP design details are discussed with a particularly comprehensive commentary on secondary bonding. A cost analysis for a 73 ft. Shrimp Trawler is provided.

GLASS,

DuPlessis, H., FIBERGLASS BOATS (FITTING OUT, MAINTENANCE, AND REPAIRS), Adlard Coles (U.K.) and John DeGraff, Inc. (USA), Tuckahoe, New York.

GLASS,

Henton, D., "GLASS REINFORCED PLASTICS AS A SHIPBUILDING MATERIAL", Marine Systems Magazine, (U.K.).

GLASS,

Kelsall, D.H., "GLASS REINFORCED PLASTIC SANDWICH CONSTRUCTION", Paper presented at symposium," Modern Developments in Materials Applicable to Yacht Construction," University of Southampton, England, 11 April 1969.

GLASS,

Kolling, J., "EXPERIENCES WITH A BOAT FROM GLASS FIBER POLYESTER RESIN-DURING CONSTRUCTION AND AFTER FOUR YEARS OPERATION", Schiffbautechnik, Vol.15, No. 5, 1965 Pgs.253-255.

GLASS,

Lindsay, E. M., "GLASS FIBER REINFORCED PLASTICS AS A MARINE STRUCTURAL MATERIAL", Paper No. 66 -699, AIAA/USN 2nd Marine System & ASW conference, Long Beach, Calif. August, 1966.

GLASS,

Marchant, A., "STRUCTURAL USE OF GLASS REINFORCED PLASTICS", Paper presented at symposium "Modern Development in Materials Applicable to Yacht Construction", University of Southampton, England, 11 April, 1969.

GLASS,

McInnes, A.,and Hobbs, W.L., "GLASS REINFORCED PLASTIC BOATBUILDING", Lloyds Register of Shipping, 10 Church St. London.

GLASS,

Moore, L.D. and Lahde, P.P., "EVALUATIONS OF LAMINATE CONSTRUCTONS FOR BOATS", Proceedings of 13th Annual Meeting, Society of the Plastics Industry 250 Park Ave., New York, N.Y. 10017.

GLASS,

Morgan, P., GLASS REINFORCED PLASTICS , Interscience Publishers, Division of John Wiley and Sons, New York (1954, 1957 & 1961).

GLASS,

Pusey, B.B., and Carey, R.H., "EFFECTS OF TIME, TEMPERATURE, AND ENVIRONMENT ON THE MECHANICAL PROPERTIES OF POLYESTER GLASS LAMINATES", The source is missing.

GLASS,

Scott-Bader, "REINFORCED POLYESTER TRAWLERS," (U.K.) Press Release, October 1966.

GLASS,

Spaulding, K.B.,Jr., "FIBERGLASS BOATS IN NAVAL SERVICE," ASNE Journal, April 1966.

GLASS,

Spaulding, K.B. Jr., "FIBER GLASS FOR BOATS OF THE U.S. NAVY", United States Naval Institute Proceedings, Professional Notes Section, March 1969.

GLASS,

Anonymous, STEEL CONSTRUCTION MANUAL, American Institute of Steel Construction.

STEEL, Essential

Colvin T.E., "PAINTING OF NEW STEEL VESSELS," The Planimeter, April 1967, SSCD.

STEEL, Background

Cox, T.B. and Rosenstein, A.H., "A REVIEW OF MODERN NAVAL STEELS," NSRDC, Materials Laboratory Tech. Note, MATLAB 420, November 1969.

STEEL, Background

Hopkins, W.A., "STEEL TRENDS RELATED TO FISHING VESSELS," Paper presented at Conference on Fishing Vessel Construction Materials, Montreal, October 1968.

Discusses grades of steel and their application to trawler construction under Lloyd's Rules.

STEEL, Background

Waters, M., "CONSTRUCTION TECHNIQUES OF FISHING ~~TRAWLERS~~", Paper Presented at Conference on Fishing Vessel Construction Materials, Montreal, October 1968.

Good description of constructing a small steel trawler using modern construction techniques.

STEEL, Background

Chapelle, H.I., BOATBUILDING, A COMPLETE HANDBOOK OF WOODEN BOAT CONSTRUCTION, W.W. Norton & Co., Inc. New York, 1941.

The "bible" for traditional wooden boat construction.

WOOD, Essential

Steward, R.M., BOATBUILDING MANUAL, Poseidon Publishing Co. 1969. Lakeville, Conn., 06039.

Excellent modern work on wood construction.

WOOD, Essential

Anonymous, "WOOD A MANUAL FOR ITS USE AS A SHIPBUILDING MATERIAL," U.S. Bureau of Ships Vols. I, II, III, & IV, NAVSHIPS 250-336 (1957-62), Washington, D.C., Available from Government Printing Office.

WOOD, Useful

Anonymous, "CONSTRUCTION GUIDE", American Plywood Association, Form No. 62-220.

WOOD, Useful

Anonymous, "PLYWOOD LIQUID TANKS," American Plywood Association.

WOOD, Useful

Anonymous, "WOOD HANDBOOK," Forest Products Laboratory, Handbook No. 72, 1935 or later.

WOOD, Useful

Anonymous, "SCANTLING RULES," Chapter 15 of "Problems in Small Boat Design", Edited by Gerald Taylor White, (1959) Sheridan House, New York.

WOOD, Useful

Anonymous, "PLYWOOD DESIGN SPECIFICATION," American Plywood Association, April 1969.

WOOD, Useful

Anonymous, "PLYWOOD DESIGN SPECIFICATION, SUPPLEMENT NO. 1, DESIGN OF PLYWOOD CURVED PANELS," American Plywood Association, 1968.

WOOD, Useful

Anonymous, "DESIGNING WITH PLYWOOD, SECTION 2", American Plywood Association.

WOOD, Useful

Anonymous, "DEFLECTION CHARTS - SECTION 4", American Plywood Association.

WOOD, Useful

Hamlin, C., "GLUED STRIP CONSTRUCTION", (1959) Yachts and Yachting, Eden Fisher Ltd., Southend-on-Sea, Essex, U.K.

WOOD, Useful

Hillman, H.F., "WOOD FOR SMALL BOAT CONSTRUCTION," International Shipbuilding Progress (10) Vol. 3, No. 26 Pgs. 551-559. International Periodical Press, Rotterdam, Netherlands Also published as a University of Michigan Student Paper in 1956.

WOOD, Useful

Mason, A., "NEVINS SCANTLING RULES," The Planimeter, August 1952, SSCD.

WOOD, Useful

McInnis, W.J. and Chapelle, H.I., "WOOD AS A FISHING VESSEL CONSTRUCTION MATERIAL," Paper Presented at Conference on Fishing Vessel Construction Materials, Montreal, October 1968.

Excellent discussion by two of the real old timers in the field. Various wood species are discussed and listed both in order of ability to resist rot and in accordance with their strength and ability to hold fastenings. A list of construction do's and don'ts is provided.

WOOD, Useful

Simpson, D.S., "SUGGESTED STANDARD SCANTLINGS," (with discussion) Pgs. 152-187 of Fishing Boats of the World: 2 (1959), Edited by Jan-Olaf Traung, Food and agriculture Organization of the United Nations, Published by Fishing News (Books) Ltd., London.

Based on investigation of 22 successful fishing vessels from 50 to 150 ft. in length, diagrams and tables are presented from which basic structural scantlings may be obtained. An excellent discussion of fastenings is presented. The discussion provides many enlightening comments on fishing craft scantlings in several countries, along with numerous scantling tables.

WOOD, Useful

Smith, R. A., "SCANTLINGS FOR SMALL WOODEN VESSELS," Pacific Northwest Section, SNAME, August, 1950.

WOOD, Useful

Tarbox, L.H., "SCANTLINGS FOR WOODEN HULLS," SSCD Paper, The Planimeter, October, November, 1959.

WOOD, Useful

Wangaard, F.F., THE MECHANICAL PROPERTIES OF WOOD, John Wiley and Sons, Inc.

WOOD, Useful

Anonymous, "PLYWOOD DESIGN SPECIFICATION, SUPPLEMENT NO. 2, DESIGN OF PLYWOOD BEAMS," 1968, The American Plywood Association.

WOOD, Background

Armstrong, F.H., "THE STRENGTH PROPERTIES OF TIMBER," 1961, Forest Products Research Laboratory, London, Bulletin No. 45. Her Majesty"s Stationery Office London.

WOOD, Background

Anonymous, "LAMINATED OAK FRAMES FOR A 50 FT. NAVY MOTOR LAUNCH COMPARED TO STEAM BENT FRAMES," Forest Products Laboratory, FPL Report R1611, October 1946.

WOOD, Background

Anonymous, "LAMINATED, BOLTED AND SOLID KEELS FOR A 50FT. NAVY MOTOR LAUNCH COMPARED FOR STRENGTH," Forest Products Laboratory, FPL Report R1625, December, 1946.

WOOD, Background

Anonymous, "GUIDE TO PLYWOOD FOR PRODUCT DESIGNERS", American Plywood Association, (1967) Tacoma, Washington.

WOOD, Background

Anonymous, "TIMBER DESIGN AND CONSTRUCTION HANDBOOK," Timber Engineering Co. (1957) Washington, D.C.

WOOD, Background

Brandlmayr, J., "PLYWOOD AS A CONSTRUCTION MATERIAL FOR FISHING VESSELS," Paper Presented at Conference on Fishing Vessel Construction Materials, Montreal, October 1968.

Discussion of plywood characteristics and applicability to fishing craft construction.

WOOD, Background

Buswell, E.E., "LAMINATED WOOD AS A FISHING VESSEL CONSTRUCTION MATERIAL", Paper Presented at Conference of Fishing Vessel Construction Materials, Montreal, October 1968.

Discussion of materials, techniques, and quality control in Canadian wood laminating industry.

WOOD, Background

Felszegi, G.W., "CONSTRUCTION TECHNIQUES AND GLUES USED IN LAMINATED TIMBERS IN FISHING VESSELS", Paper Presented at Conference on Fishing Vessel Construction Materials, Montreal, October, 1968.

WOOD, Background

Fox, U., "SEAMANLIKE SENSE IN POWERCRAFT," (1968), Peter Davies, London pp. 139-145.

Brief but informative discussion of several examples of advanced use of wood for hull structure. Seven structural plans are presented. Interesting data compilation; hull planking thickness vs-L.O.A. for example.

WOOD, Background

Hillman, H.F., "WOODS FOR SMALL BOAT CONSTRUCTION", ISP Vol. 3, No. 26, October 1956.

WOOD, Background

Lankford, B. and Pinto, J.E., "DEVELOPMENT IN WOODEN MINESWEEPER HULL DESIGN SINCE WW II", Naval Engineers Journal, April 1967.

WOOD, Background

Lovell, R.E.L., "FAST PATROL BOAT HULLS-THE CASE FOR WOOD (CONSTRUCTION METHODS IN A HAMPSHIRE SHIPYARD)", Ship and Boatbuilder, International, June 1966.

WOOD, Background

Mark, R. and Zuckerman, B.M., "REINFORCED PLASTICS AS A PROTECTIVE COATING FOR WOOD," Proceedings of 13th Annual Meeting, Society of the Plastics Industry, 250 Park Ave. New York, N.Y. 10017.

WOOD, Background

Peck, E.C., "WOOD BENDING IN SMALL BOAT BUILDING," Wood Products, January 1947 and Wood Working Digest, February 1947.

WOOD, Background

Pedersen, G., "WOOD FOR FISHING VESSELS," (with discussion), Pgs. 212-228 of Fishing Boats of the World: 3, (1960) Edited by Jan-Olof Traung, Food and Agriculture Organization of the United Nations, Published by Fishing News (Books) Ltd. London.

An excellent discussion of material properties and design considerations for wooden fishing craft structure. Design proposals are made for optimim use of the material.

WOOD, Background

Potter, S. "CONSTRUCTION TECHNIQUES FOR WOODEN FISHING VESSELS" Paper presented at Conference on Fishing Vessel Construction Materials, Montreal, October, 1968.

Interesting and useful discussion of construction techniques for wood fishing vessels.

WOOD, Background

Saethre, J., "SOME NOTES ON STRESS ANALYSIS AND CONSTRUCTION OF FISHING VESSEL STRUCTURE," Paper presented at Conference on Fishing Vessel Construction Materials, Montreal, October 1968.

Presents results of computer analysis and full scale testing of sawn and laminated fishing vessel frames of different shapes.

WOOD, Background

Smith, H.G., <u>BOAT CARPENTRY</u>, (1955, 1965) D. Van Nostrand Co., Inc., New York.

WOOD, Background

Watts, C.J., <u>PRACTICAL YACHT CONSTRUCTION,</u> (1947, 52, 57, & 63) Adlard Coles, Ltd.

Traditional construction of wooden sailing yachts.

WOOD, Background

Alexander, J.B., "BASIC STRESSES FOR WOOD", 1949, Forest Products Research Society Bulletin No. 62, Madison, Wisconsin.

WOOD,

Doyle, D.V., "DIAPHRAGM ACTION OF DIAGONALLY SHEATHED WOOD PANELS", (1957) Forest Products Laboratory, Report No. 2082, Madison, Wisconsin.

WOOD,

Erickson, E.C.O., "MECHANICAL PROPERTIES OF LAMINATED MODIFIED WOOD," (1959), Forest Products Laboratory Report No. 1639, Madison, Wisconsin.

WOOD,

Evans, K.G., "DESIGN OF WOODEN NAVAL VESSELS", (1957) Transactions I.N.A. Vol. 100, 1958, London.

WOOD,

Fread, A.D., "FACTORS AFFECTING STRENGTH AND DESIGN PRINCIPLES OF GLUED LAMINATED CONSTRUCTION", (1956) Forest Products Laboratory Report No. 2061, Madison, Wisconsin.

WOOD,

Holt, J., "JOINTS FOR PLYWOOD BOATS," Parts I & II, Yachting World, December 1961 & January 1962.

WOOD,

Primrose, A., "SPECIALIZED TIMBER CONSTRUCTION", (Summary only) Paper presented at symposium "Modern Developments in Materials Applicable to Yacht Construction," University of Southampton, England, 11 April 1969.

WOOD,

Wheeler, W.D., "DESIGNING WITH WOOD IN SMALL BOAT CONSTRUCTION", Student Paper, New York Metropolitan Section, SNAME, December 1956.

WOOD,

Whittier, R., "USING PLYWOOD EFFECTIVELY IN SMALL CRAFT CONSTRUCTION," American Plywood Association Release.

WOOD,

Anonymous, "DESIGNING SANDWICH PANELS WITH CERTIFIED KILNDRIED BELCOBALSA CORES", Balsa Ecuador Lumber Corp., Data Sheet No.35, New York.

COMP, Useful

Lippay, A., "APPLICATION AND DESIGN CONSIDERATIONS, BALSA CORE MATERIALS AS APPLIED IN MARINE SANDWICH STRUCTURES", Symposium - Structural Design and Production of Small Boats and Yachts, SNAME, N.Y. Section, January, 1966.

COMPOS, Useful

Lippay, A., "DESIGN CONSIDERATIONS FOR FIBERGLASS SANDWICH WITH END GRAIN BALSA CORE", Boat Construction and Maintenance, November 1965.

COMP, Useful

Lippay, A. and Levine, R.S., "END GRAIN BALSA CORED REINFORCED PLASTIC AS A FISHING VESSEL CONSTRUCTION MATERIAL", Paper Presented at the Conference on Fishing Vessel Construction Materials, Montreal, October 1968.

Balsa characteristics and history as a boat building material are presented. A recently constructed 72 ft. GRP-balsa trawler is discussed in detail.

COMP, Useful

Spaulding, K.B. Jr., "CORED FIBERGLASS REINFORCED PLASTIC HULL CONSTRUCTION", Paper Presented at Conference on Fishing Vessel Construction Materials, Montreal, October 1968.

Guidance and background information for selection of core materials and configurations for use in hull construction. Actual construction experience and critical materials characteristics are cited.

COMP, Useful

Anonymous, "BALSA CORE USED IN 50' FIBERGLASS YACHT", Boat Construction and Maintenance, June, 1965.

COMP, Background

Anonymous, "DESIGN APPLICATIONS FOR BALSA CORES", The Boating Industry, January 1968.

COMP, Background

Gaffen, M. and Scott, R., "FEASIBILITY STUDY OF THE APPLICATION OF CU-NI ALLOY TO BOAT HULL CONSTRUCTION FOR INT. COPPER RESEARCH ASSOCIATION", Gibbs and Cox, Inc. Report No. 16161/(1-636) December 1967.

COMP, Background

Anonymous, "HANDBOOK OF PLYFOAM CONSTRUCTION", Plyfoam, Inc., Hauppauge, New York.

Marine applications of Plyfoam PVC foam core.

COMP

Mark, R, "BALSA CORES FOR REINFORCED PLASTIC STRUCTURES", Modern Plastics, 1956

COMP,

Phillips, L.N., "COMPOSITES MADE FROM HIGH STIFFNESS FIBERS", Paper presented at symposium "Modern Development in Materials Applicable to Yacht Construction," University of Southampton, England, 11April 1969.

COMPOS,

Boatwright, G.M. and Turner, J.J., "EFFECT OF SHIP MANEUVERS ON MACHINERY COMPONENT DESIGN", BUSHIPS Journal, September 1965.

ENGINE, Background

Cramer, R.J., and Froelich, K.F., "RATING ENGINES BY FUEL-AIR RATIO EFFECTS," ASME Oil and Gas Power Proceedings, 1956.

Engine, Background

Lundquist, W.G., "THE 'DYNA-STAR' POWERPLANT CONCEPT FOR COMPACT DIESEL AND SPARK IGNITION ENGINES", SAE National Powerplant Meeting, October 1963, Paper 770A.

ENGINE, Background

Morrisson, R., "POWERPLANTS FOR HIGH PERFORMANCE ASW VEHICLES," SAE National Aerospace Engrg. and Manufacturing Meeting, October 1962, Paper 591A.

ENGINE, Background

Paynter, H.M. ANALYSIS AND DESIGN OF ENGINEERING SYSTEMS, MIT Press, 1961

ENGINE, Background

Vibrans, F., "VARIATIONS IN MARINE ENGINE PERFORMANCE WITH DEPARTURE FROM DESIGN," ASME Oil and Gas Power Proceeding, 1956.

ENGINE, Background

Wennberg, P.K., "THE DESIGN OF THE MAIN PROPULSION MACHINERY PLANT INSTALLED IN THE USCG CUTTER HAMILTON", SNAME, Transactions - Vol. 74, 1966.

ENGINE, Background

Wyland, G.G., "SELECTION OF POWER PLANTS FOR YACHTS," SNAME, Marine Technology, July 1968.

ENGINE, Background

Davies, J.H., "GASOLINE VS DIESEL ENGINES", The Planimeter, SSCD , 12/56

ENGINE,

Maleev, V.L., <u>INTERNAL COMBUSTION ENGINES,</u> McGraw Hill, 1945.

ENGINE,

Perry, C.F., "ENGINE SELECTION AND RATING FOR MILITARY SHIP APPLICATION", SAE Paper 670953.

ENGINE,

Taylor, C.F. and Taylor E.S., <u>THE INTERNAL COMBUSTION ENGINE</u> , 2nd Edition, International Textbook Company, 1961.

ENGINE,

(Unknown), "ASPECTS OF THE MECHANICAL PROPULSION OF TUGS", Transactions, Institute of Marine Engineers, Vol. 78, No. I, 1966.

ENGINE,

Allen, C.H. (Bolt, Beranek and Newman) "GUIDELINES FOR DESIGNING QUIETER EQUIPMENT", Mechanical Engineering, January 1970.

Good explanation of basic acoustic principles for the designer.

ENG INST, Useful

Baier, L.S., and Schubert, J., "SKIN COOLER DESIGN," Pacific Northwest Section, SNAME, April 1962.

ENG. INST, Useful

Cashman, R.M., "DESIGN OF MARINE MACHINERY FOUNDATIONS", Transactions, SNAME, 1962.

ENG INST, Useful

Robberson, E., "FRESH WATER ENGINE COOLING", Article in Technical Yachting, Yachting Publishing Co., New York, 1961.

ENG INST, Useful

Robberson, E., "INBOARD ENGINE SILENCING," Article in two parts in Technical Yachting, Yachting Publishing Co. New York, 1961.

Mufflers and acoustic treatments for boats.

ENG INST, Useful

Anderson, B.W. THE ANALYSIS AND DESIGN OF PNEUMATIC SYSTEMS, John Wiley, 1967

ENG INST, Background

Hamilton, R., "CONTROL DESIGN AND EXPERIENCE ON CODOG POWERED 210 FT. RELIANCE CLASS CUTTERS", ASME Paper 67 GT 28.

ENG INST, Background

Sorel, R.T., "NOISE AND VIBRATION: ITS PREVENTION AND CURE," The Planimeter, November 1956, SSCD.

ENG INST, Background

Welbourn, D.B., "THE ESSENTIALS OF CONTROL THEORY FOR MECHANICAL ENGINEERS", The American Elsevier Publishing Co. 1963.

ENG INST, Background

Wennberg, P.K., "DESIGN CONSIDERATIONS AND SELECTION OF CONTROLS FOR VESSELS EQUIPPED WITH CONTROLLABLE PITCH PROPELLERS", Society of Automotive Engineers, Paper 609B, 1962.

ENG INST, Background

Youngworth, J.J., (Universal Engine Co.) "INSTALLING THE INBOARD ENGINE," Article in two parts published in Technical Yachting, Yachting Publishing Co. 50 W 44th St. New York, N.Y., 1961.

A practical discussion of the mechanics of installing engines in wood boats.

ENG INST, Background

King, R.P., "THE HISTORY AND DEVELOPMENT OF A MODERN PNEUMATIC PROPULSION CONTROL FOR MEDIUM HORSEPOWER MARINE DRIVES", Society of Automotive Engineers, Paper 528D, 1962.

ENG INST,

Krogstad, W., "AUTOMATED CONTROLS FOR THE LARGE MARINE DIESEL ENGINE", SNAME, Section Paper, Great Lakes and Great Rivers Section, 1963.

ENG INST,

Drake, F., "THE GOVERNING OF INTERNAL COMBUSTION ENGINES", ASME Oil&Gas Power Division Proceedings, 1951.

ENG INST,

Kilgore, U., "BELT DRIVES FOR MARINE PROPULSION," SSCD Paper, Great Lakes Section, Unpublished,

DRIVES, Useful

Budd, W.I.H., "MAIN REDUCTION GEARS FOR CONTRA-ROTATION " SNAME, Marine Technology, October 1969.

DRIVES, Background

Cascia, V., "A NEW MARINE TRANSMISSION FOR DIESEL ENGINES IN 800 H.P. RANGE," ASME Paper 63-GP9, 1963.

DRIVES, Background

Cole, "STAINLESS 17-4 PH BAR-CORROSION BEHAVIOR AND PERFORMANCE OF BOAT SHAFTS IN FRESH AND SALT WATER," SNAME Southern California Section, February 1963.

DRIVES, Background

Fielding, S.A., "DESIGN IMPROVEMENTS AND STANDARDIZATION OF PROPULSION SHAFTING AND BEARINGS", SNAME, Marine Technology, April 1966.

DRIVES, Background

Mann, G., "DESIGN OF PROPULSION SHAFT SYSTEMS, USING FAIR CURVE ALIGNMENT THEORY", Naval Engineers Journal, December 1964.

DRIVES, Background

Richardson, W.S., "THE FRICTION CLUTCH REVERSE-REDUCTION GEARS FOR THE GTS," ASME paper 69-GT-5, 1969.

DRIVES, Background

Robberson, E., "STERN GEARS: V AND Z DRIVES," Article in Technical Yachting, Yachting Publishing Co. New York, 1961.

DRIVES, Background

Spaetgens, T.W., "TORSIONAL VIBRATIONS, SOME ACTUAL MARINE PROBLEMS AND SOLUTIONS," Transactions, Institute of Marine Engineers, Canadian Division Supplement, No.11, March 1963.

DRIVES, Background

Bremen, N.C., "HEAVY DUTY CHAIN DRIVES FOR MARINE PROPULSION", Proceedings ASME Oil and Gas Power Division, 1946.

DRIVES,

Cheng H.M., et al. "ANALYSIS OF RIGHT - ANGLE DRIVE PROPULSION SYSTEM", Transactions, Diamond Jubilee Meeting, SNAME, 1968.

DRIVES,

D'Ottavio, J., "SOME ASPECTS OF INDIRECT DIESEL DRIVES", International Shipbuilding Progress, November 9, 1955.

DRIVES,

Forster, W.R., et al, "INTERLOCKED MARINE REVERSE GEAR PNEUMATIC CONTROL," The Society of Automotive Engineers, Paper 528C, 1962.

DRIVES,

Gugliuzza, T.A., and Hargett, W.H., "GEAR DESIGN AND LABORATORY TEST EXPERIENCE-MARINE GAS TURBINE PROPULSION", ASME Paper 69GT-3, 1969.

DRIVES,

Mott I.K., and Fleeting, R., "DESIGN ASPECTS OF MARINE PROPULSION SHAFTING SYSTEMS", Transactions, Institute of Marine Engineers, Vol. 79, Page 177,1967.

DRIVES,

Ambrose, H., et. al., "PROPULSION DIESEL ENGINES FOR LANDING CRAFT AND SMALL BOATS," SNAME Transactions, 1948.

DIESEL, Background

Anonymous, "STANDARD PRACTICES FOR STATIONARY DIESEL ENGINES," 4th Edition Diesel Engine Manufacturers Association, 1951.

DIESEL, Background

Anonymous, "MARINE DIESEL STANDARD PRACTICES," Second Edition, 1948, Diesel Engine Manufacturers Association, 1 North La Salle St., Chicago, Illinois.

DIESEL, Background

Cavileer, A., "THE DEVELOPMENT OF A DIESEL ENGINE FOR THE UNITED STATES NAVY", Proceedings ASME Oil and Gas Power Division, 1958.

DIESEL, Background

Schweitzer, P., SCAVENGING OF TWO-STROKE CYCLE DIESEL ENGINES, McMillan, 1949.

DIESEL, Background

Wechsler, L. and Holler, H., "DEVELOPMENT OF A LIGHTWEIGHT, HIGH OUTPUT, FOUR CYCLE, DIESEL ENGINE FOR NAVAL SERVICE", Proceedings ASME Oil and Gas Power Division, 1958.

DIESEL, Background

Anonymous, "MARINE ENGINEERING INSTALLATION FACTS," A bulletin of Detroit Diesel Division General Motors Corp.

DIESEL,

Anonymous, "MARINE DIESEL APPLICATIONS PRACTICES," Cummins Engine Co.

DIESEL,

Bryner, A., "AN INTRODUCTION TO MARINE DIESEL ENGINE INSTALLATIONS," Caterpillar Tractor Company, (unpublished notes).

DIESEL,

Anonymous, "GENERAL CRITERIA FOR ENSURING QUIET GAS TURBINE SHIPBOARD INSTALLATIONS", NAVSHIPS 250-645-3.

GAS TURB, Useful

McCoy, A.W., "GAS TURBINE PROPULSION FOR HIGH-SPEED SMALL CRAFT", SNAME, Marine Technology, July 1968.

Excellent paper dealing with many subjects related to powering small craft and the rational selection of power plant and propulsion units. Results of experimental boat programs.

GAS TURB, Useful

Anonymous, "INSTALLATION DESIGN CRITERIA FOR GAS TURBINE APPLICATION IN NAVAL VESSELS," Naval Ship Systems Command, NAVSHIPS 0941-038-7010, Technical Manual.

GAS TURB, Background

Anonymous, "THE MARINE ST 6," brochure of United Aircraft of Canada, LTD. Gas Turbines.

GAS TURB, Background

Brockett, W.A., et. al., "U.S. NAVY'S MARINE GAS TURBINES", ASME Paper No. 66-GT/M-28, October 1965.

GAS TURB, Background

Dalton, C.A., "SULFUR AND SEA SALT ATTACK OF TURBINE BLADES," ASME 65 GTP-7.

GAS TURB, Background

Graves, G.L. and Carleton, R.S., "GAS TURBINES FOR UNCONVENTIONAL CRAFT", ASNE Journal, May 1963.

GAS TURB, Background

Hardy, G., "THE DEVELOPMENT OF A MARINE VERSION OF THE UNITED AIRCRAFT OF CANADA PT6 ENGINE", ASME Paper 66 - GT/M-31.

GAS TURB, Background

Harper, "VIBRATION AND NOISE CHARACTERISTICS OF AN AIRCRAFT-TYPE GAS TURBINE USED IN A MARINE PROPULSION SYSTEM," ASME Paper 69-GT-8.

GAS TURB, Background

Humphrey, W.R. & Mass, L.M. " ALLISON MODEL 501-K14 GAS TURBINE 1,000 HR. SALTWATER INGESTION TEST", ASME 69-GT 28, 1969.

GAS TURB, Background

Palmer, I., "GAS TURBINES IN HYDROFOIL SEACRAFT", ASME Paper No. 62-GTP-4 March, 1962.

GAS TURB, Background

Stoeckly, E.E., "DEVELOPMENT OF THE GENERAL ELECTRIC LM 1500 GAS TURBINE AS A MARINE POWER PLANT", ASME-66 GT/M-22.

GAS TURB, Background

Wienert, E.P. and Carlton, G.A., "SALT-WATER PROBLEMS IN MARINE GAS TURBINE," ASME Paper 65-GTP-18.

GAS TURB, Background

Austin, K.A., "GAS TURBINE PROPULSION FOR HYDROFOIL CRAFT", ASME, November, 1959, Paper No. 59-A-324.

GAS TURB,

Linsdey, W.H., "THE MARINE GAS TURBINE," Proceedings, SNAME Diamond Jubilee Meeting, 1968.

GAS TURB,

Sawyer, W.T., Kelnhofer, W.J., and Smith R.A., "DESIGN CONSIDERATION FOR MARINE GAS TURBINE DUCTING", ASME-66 GT/M-27.

GAS TURB,

Anonymous, "ELECTRICIANS MANUAL", Boat Construction and Maintenance Magazine Circa 1965, (Now out of business-1970)

Collection of articles on boat electrical installations. ELECT, Useful

Springston, G.B. Jr., and Thomas, S.L., "AN EXPERIMENTAL ELECTROMAGNETIC LOG FOR MEASURING THE SPEED OF A SMALL CRAFT IN ROUGH WATER", Test and Evaluation Report 361-H- NSRDC November 1969. Each transmittal of this document outside the Department of Defense must have prior approval of the Head, Department of Hydromechanics, Naval Ship Research and Development Center.

ELECT, Useful

Robberson, E., "INBOARD AND OUTBOARD ELECTRICAL POWER; PART I, AN EXPLANATION OF THE LEAD ACID BATTERY; PART II, ALKALINE STORAGE BATTERIES," Technical Yachting, Yachting Publishing Co, New York, 1961.

ELECT, Background

Anonymous, "FLOW OF FLUIDS THROUGH VALVES, FITTINGS AND PIPE", Crane Co. Technical Paper 410.

PIPING, Useful

Anonymous, "EDUCTOR DESIGN MANUAL", U.S. Navy Bureau of Ships , Index No.N.S. 662-078 NAVSEC.

PIPING, Background

Ammons, W.D., "MARINE AIR CONDITIONING, HEATING AND REFRIGERATION," The Planimeter , SSCD, Fall/66.

PIPING,

Blackburn, J.F., et. al., "FLUID POWER CONTROL", MIT Press, 1960.

PIPING,

Winter, R., "HOT WATER HEATING OF CABINS", SSCD Paper, The Planimeter, February 1964.

PIPING

Woodward, J.B., (University of Michigan) "HYDRAULICS FOR PIPING SYSTEM DESIGN", Unpublished notes.

PIPING,

Ogg, R.D. & Danforth, R.S., "ANCHORS AND ANCHORING", Danforth-White, Portland, Maine. Third Edition, 1962.

OUTFIT, Essential